TEN DECADES OF DAIRY TECHNOLOGY

THE OHIO STATE UNIVERSITY

1870 - 1970

Prepared By The Faculty Of The Department Of Dairy Technology

To Commemorate The Centennial Of The Ohio State University

- June, 1969 -

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FOREWORD

This document constitutes a brief history of the academic, research, extension, and service activities of the area of dairy technology since the establishment of The Ohio State University in 1870. The presentation takes cognizance of the strong relationship which has prevailed between the Department and the alumni - and between the Department and the commercial industry of Ohio - both of which have been essential to the welfare of the dairy technology program since its inception. Also, in this historical treatment, an attempt has been made to portray the philosophy, objectives, and programs of dairy technology and how these were adjusted with the passage of time to meet changing conditions. Each reader must determine for himself how successful we have been in this attempt.

Those who shared in the preparation of this history encountered many barriers - not the least of which was the scantiness of information in some instances that made complete and accurate documentation impossible. Furthermore, the necessity of painting the picture of past events with a "broad brush" made it essential to omit many details - details which may appear extremely important to those who were on the scene at the time and may have been participants. Therefore, we present this history with a feeling of inadequacy and humility - and with the full realization that is will contain errors of commission or omission. We can only offer, in advance, our apologies for such errors.

As we reviewed the history of dairy technology since the offering of the first course in dairying in 1874, we could not but experience a deep sense of gratitude for those University, College, and Department administrators, faculty members, and industry leaders who had the foresight and provided the human efforts to initiate the dairy technology program of The Ohio State University and to give impetus, direction, and purpose of its development. The impact the earlier dairy technology faculty members had on the changes and advances of the dairy industry of Ohio, and the distinguished success achieved by so many of the graduates in all phases of life, stand as evidence that those who pioneered the dairy technology program and those who followed created a monument of immeasurable and lasting value. It should be the hope of us who have inherited this valuable creation that we can serve as "good shepherds"of that we have received and build a yet stronger edifice on the sound foundation that has been provided. - I. A. Gould, June 30, 1969

THE DEPARTMENT'S HOMES

THE UNIVERSITY DAIRY

THE HOMES OF DAIRY TECHNOLOGY

"And there was the beginning -
With bricks, mortar, and things
And people with vision
As to what these would bring."

THE BEGINNING:

The Ohio Agricultural and Mechanical College was founded in 1870. The organization proposed was to include ten departments. The first of these was The Department of Agriculture.

In January 1894, the State Board of Agriculture adopted a resolution requesting the Board of Trustees to establish a Dairy School. At the next session of the legislature, the Committee on Agriculture of the House recommended a bill providing an appropriation of $40,000 for a building and equipment. The bill passed the House without an appropriation, but did not pass the Senate.

The remarkable development of the dairy industry in Wisconsin, after the establishment of a dairy school in that state, had an influence on the University Board of Trustees, and on April 9, 1896, they ordered a building to be erected costing $75,000 or less. The University Architects visited Cornell University; the College of Agriculture, Guelph, Canada; Agriculture College at Lansing, Michigan; and the University of Wisconsin to examine their facilities.

An appropriation of $85,000 was made to build Townshend Hall. The contract was let July 24, 1896, to the Columbus Construction Company for $69,578. After much delay and trouble, this company defaulted and the State finished the building June 30, 1898, at a cost of $108,837. The state was able to collect $500 from the bonding company.

The cost of equipment for the building was $13,384 and the building was described as the finest of its kind. The north basement housed the creamery and the pasteurizing plant and the south basement was an animal pavilion, for the study and judging of dairy cattle. H. J. Noyes, Chief Instructor of the Wisconsin Dairy School from 1892 to 1894, became a member of the staff at Ohio State University, from 1895 to 1899, as an Associate Professor in Dairying, and probably had an important part in the planning of the building. An engine house was constructed across the alley from the northwest corner of Townshend, and was connected to the plant by an underground passageway lined with cheese curing rooms. It became known as the "Little Deshler" (named after the then elite Deshler-Wallick Hotel in Columbus) because of a room above the refrigeration equipment that housed two students. One student had the responsibility of taking care of the ice making machinery, the other delivered milk and the ice that was made in the engine house.

With the erection of additional animal buildings, the judging pavilion was soon removed from the basement of Townshend Hall, and the space converted into Dairy Testing Laboratories.

THE NEW HOME:

In 1940, plans were being made for a new Dairy Technology building but in the summer of 1941, the U.S. Government prohibited the use of structural steel for any purpose other than defense. This building would have been on the East Campus on Neil Avenue near Woodruff Avenue. Plans for another new building for Dairy Technology were started in 1948 - this time to house Dairy Technology and Agricultural Biological Chemistry and to be located on the West Campus near Lane Avenue. On March 17, 1949, under authority of the Board of Trustees, bids were received for the Agricultural Laboratory (later named Vivian Hall) for which House Bill 496 provided $960,000. The total of low bids for the various contracts was $952,035.

During Fall Quarter 1951, the Department offices, the Dairy Plant, and the laboratories were opened. The Faculty started moving in during Winter Quarter, and by Summer Quarter of that same year, the move was complete and all facilities were ready for use.

SPACE ADJUSTMENTS:

Since the time the Department moved into it new quarter in Vivian Hall, the problem of space needs and utilization has been ever present. The plans were originally designed to accomodate approximately five faculty members, four graduate students, and relatively large undergraduate classes. As time passed, the enlargement of the faculty to 10 and the graduate student enrollment to 25, coupled with simultaneous reduction in undergraduate student enrollment, necessitated major adjustments in space utilization. The majority of rooms designed for undergraduate instruction became wholly or in part facilities for faculty and graduate students. These developments merely indicate the difficulty of the task of projecting, for many years, the future needs of an organization in the face of rapidly changing conditions.

"Both theory and practice have their places.
How fortunate when both combined
Can build a youth into a man."

THE EARLY YEARS:

The original Dairy Plant of 1898 - located in the north basement of Townshend Hall - consisted of a salesroom, receiving room, sterilizing and bottling room, butter making room, cheese room, storeroom, refrigerator room, two cheese curing rooms, and a wash room. Most of the equipment was operated by overhead belt, except the butter churn and bottle filler which were hand operated. The salesroom sold milk, cheese and butter to the general public. Several better-known grocery stores of Columbus obtained butter and cheese for resale.

The initial objectives of the Dairy Plant were to provide a safe supply of milk to the Campus and provide facilities for a dairy apprenticeship program for interested students.

The operations were conducted by dairy students working in the plant. The initial total investment in equipment at Townshend Hall was $13,384, and the small but adequate Laboratory was considered the finest in the country. Much of the equipment was made from wood, some was hand operated, but the students were considered fortunate to receive training in this modern facility.

From 1898 to 1910, the University Herd supplied all of the milk for the Dairy Plant. The Dairy Barn was just three buildings north of Townshend Hall, and warm milk, in cans, was transported to the plant in a large hand cart. However, with the growing campus population, an increased demand for milk and milk products developed and two independent shippers were added. Cans of cream shipped in from farms were picked up at Union Station twice a week to be used in buttermaking.

No pasteurization was practiced until 1911 when two small vats were installed that could be raised and lowered to fill or empty by gravity.

Two Off-Campus retail milk routes were operated in the city around the University and provided the students with merchandising and sales experience. Later this became one route with a milk wagon drawn by a large mule. The mule had a "thing" for automobiles and on several occasions drew the milk wagon into cars.

In 1918, all commercial activities were discontinued and products were then disposed of through the Ohio Union, Oxley Hall, and the Hospital.

THE MIDDLE YEARS:

Three years later (1921), the General Assembly established a rotary fund for the College of Agriculture, at which time commercial On-Campus

sales were resumed - but the Off-Campus retail routes were not re-established.

As stainless steel equipment became available, the wood and copper equipment was replaced and efforts were made to maintain the plant in a modern condition as an example for the industry and for visitors to the Campus.

Additional milk producers were added over the years, and by 1942 the University Herd provided only about one-third of the volume required to supply the Dormitories, Faculty Club, University High School and University Hospital. Fifty percent of the milk was used as fluid milk, the remainder being used for the manufacture of butter, cottage cheese, Cheddar cheese, Swiss cheese, cream and buttermilk.

During the mid 40's, the students were paid by piece work based on various rates established for different jobs. Thus, the fastest men got the most total pay. This was changed to the conventional hourly rate system in 1949.

THE LATER YEARS:

With the passage of time, the initial objectives and activities of the Dairy Plant have broadened considerably along with the scope of the operation.

The Dairy Plant is accepted as an integral part of the educational and research activities of the Department. It serves as (a) a laboratory for the four-year and graduate students, for organized adult educational programs, and for non-credit technical training, (b) a development center and a pilot plant for research, (c) a source of practical training and income for both dairy and non-dairy students who perform the major share of the day-to-day work of receiving, processing, manufacturing, packaging, and on-Campus distribution, (d) the major supplier of milk and milk products to Campus food service units, and (e) as a demonstration center which is visited by about 5000 adults and children annually. The plant provides foreign students with invaluable industrial-type training, and the pilot plant research has led to the development of new dairy foods, and improved equipment, packaging design and materials.

The commercial activities have expanded with the growth of the University population. During a period of rapid growth of the University, immediately after World War II, outside dairies were called upon to help fill the needs, until higher capacity equipment could be installed. In 1959, the Dairy Plant was expanded to fill all of the needs of milk, ice cream, and other dairy products on Campus.

MANAGEMENT AND TRAINING:

Throughout its history, The University Dairy Plant has operated with the philosophy of providing training and/or income for the maximum number of four-year students. In the 40's and possibly before, The Department Chairman served as Plant Manager and the plant operations were handled by

two superintendents who were recent graduates of the Department: one serving as the Senior and the other the Junior Superintendent. This two-year apprenticeship was designed to train these men for responsible positions in industry.

Following 1949, with the rapid growth of the University and the corresponding increased demand placed on the Dairy Plant, action was taken to designate a faculty member as full-time manager and to provide a limited number of full-time assistants - commensurate with the objective of continuing to provide training and income for many students. This policy is now being practiced and 25-40 students work on a part-time schedule during any given quarter under the supervision of well-qualified personnel.

THE SALESROOM:

The Salesroom is now a major functional unit of the Dairy Plant. In earlier times the Salesroom in Townshend Hall sold only milk and milk products processed or made in the Dairy Plant. When Vivian Hall was completed, plans included a similar small salesroom selling only dairy products. However, with the development of the West Campus of the University, and by popular request, the Salesroom began stepwise to add a variety of other food items - mainly of a food service nature. Consequently, the role of the Salesroom changed from that of a dairy store alone, to that of a food service unit providing complete lunches. By 1969, the diversification included a catering service to Campus groups.

PHYSICAL CHANGES AND ADJUSTMENTS:

The change in the University Dairy over the years is reflected in the physical adjustments and improvements which have been made, in order that the Plant would keep abreast of an ever-growing University and advances in the commercial industry. Today, equipment investment in the Plant approximates $300,000. The following depicts the changes which have been made since the opening of Vivian Hall:

1956-1960: Bulk dispensing of milk in cans for Campus service centers replaced 1/2 pint bottles; bottle washer and filler removed and replaced by Pure Pak (35/min) wax machine; farm bulk tank pick up reached 100% of producers, and the number of producers decreased from 35 to 14.

1961-1965: Double compartment refrigerated truck obtained for delivery of milk and ice cream; pasteurizer capacity increased from 300 to 400 ghp; Pure Pak packaging unit replaced by Sealking plastic coated carton filler - operating at the rate of 65 units/min.; a Tri Processor was installed; high temperature-short-time pasteurization capacity was increased to 600 gals/hour; an additional refrigerated delivery truck was obtained to handle large ice cream needs; a 3-barrel Vogt continuous ice cream freezer was added, as well as a Drumstick machine; 6-gallon disposable plastic liners and reusable plastic shells were developed in cooperation with an Ohio Plastic Company and replaced the 5-gallon metal dispenser cans; a 600-gallon Stainless Steel Cheese Vat, and two 300-gallon processors were added;

the 12-gallon plastic dispensing system replaced the existing 10-gallon cans for service center feeding.

1968-1969: Sealking filler was replaced by "QP" Pure Pak filler with a capacity of 75 units per minute. The ice cream manufacturing capacity was doubled by increasing homogenization and cooling capacity of the equipment.

PEOPLE - AND THE DAIRY PLANT:

History reveals the following people are among those who played an important role in the operation of The Ohio State University Dairy Plant over the years:

1910-1927: W. L. Clevenger ('06) - C. W. Holdson ('14) - C. B. Irwin - D. S. Kochheiser ('19) - F. S. DeLashmutt ('16).

1928-1939: H. D. Drain ('13) - D. A. Charles ('33) - W. L. Slatter ('35) - W. H. Swallen ('35) - R. Fifer ('37) - R. S. Alberts ('39) - H. G. Dissly - "DAD" Bates - J. Kimbrough - C. File.

1940-1954: J. D. Bowers ('40) - R. Larson - H. P. Hamilton ('38) - R. H. Black ('46) - J. A. Paxton ('47) - B. T. Hullinger ('48) - R. B. Douglas (M.S. '52) - J. T. Smith ('33) - P. W. Riddle ('50).

1955-Present: P. C. Hintz (M.S. '53) - H. A. Hartley - C. E. Cobb ('47) - J. P. Kenyon - W. L. George ('63) - N. L. Sater.

SOME MILESTONES IN THE DAIRY PLANT:

1. Early 1930's - The first homogenized milk was produced as a commercial product in Ohio.

2. Mid-1940's - Chocolate milk was first stabilized (sugar and cocoa suspended) in a joint venture with a commercial company.

3. Early 1940's - First fresh flavored concentrated milk produced.

4. 1964 - Plastic milk dispensing system developed in cooperation with General Films Company.

5. 1968 - First Low Fat Dairy Spread developed and produced as an example for the Dairy Industry.

THE ACADEMICAL ASPECT

"And courses were offered -
And students came -
And graduates went -
And the years passed!"

THE EARLY YEARS:

Although the Department of Agriculture was created in 1870, when the Ohio Agricultural and Mechanical College was founded - the first course in dairying was offered in 1874. This course entitled "The Dairy and Its Products" was required for second-year students in Agriculture. During the next decade, courses in "Dairy Management", "Animal Products of the Farm", and "Dairying" were introduced - along with basic training in Agricultural Chemistry where students conducted investigations of "microscopic examination of butter and its adulterations, analysis of cheese, full milk cheese, and Chicago flats, and chemical analysis of butter".

In 1894 - a "Course in Dairying" appeared in the Catalog of the School of Agriculture for the first time. It is described as follows: "The COURSE IN DAIRYING begins each year on the Wednesday following the 1st day of January and continues for 12 weeks. Butter-making as practiced in the farm dairy and in the creamery is thoroughly taught. The student performs all necessary operations in the manufacture of butter by these two methods under the guidance of the instructors. In Cheese-making the principles are taught with elementary practice."

Other dairy-related courses taught that year were Dairy Farming, Butter and Cheese-making, Agricultural Chemistry (dealing with Milk Chemistry and Testing), and an engineering course on the Care of the Boiler and Engine.

During this initial period, Assistant Professor Dewitt Goodrich taught butter and cheese-making, Professor H. A. Weber taught dairy chemistry, B. B. Herrick was lecturer in cheese-making, W. C. McCracken was Professor in butter-making. In 1894-95, 43 students enrolled in butter and cheese-making, in contrast to 10 registered for Dairy Farming and Agricultural Chemistry.

The period of 1895-18 witnessed further strengthening and broadening of the "Course in Dairying". Early in this period, the first course in dairy bacteriology was offered - a course entitled "Physiology" which dealt with the microbiology of milk, butter, and cheese. Agricultural chemistry continued to be stressed along with courses in butter and cheese-making. A new course in "Milk Sanitation" was introduced in 1899, bearing the description "Lectures and Laboratory Practice on What Constitutes Pure Dairy Products". The course "Care of The Boiler and Machinery" was changed to "Mechanical Engineering" and included steam machinery.

New faculty members included John W. Decker, Associate Professor in Dairying; E. S. Guthrie, Instructor in Butter-making; and D. A. Crowner and Elisha Smith, assistants in Butter-making and Cheese-making, respectively.

During 1905-15, the dairy courses offered included the following (with the student enrollment for the year given after each course): Elements of Dairying (32); Milk Inspection (21); Dairy Mechanics (5); Advanced Dairying (9); Butter-making (43); Cheese and Fancy Dairy Products (6); and Dairy Laboratories (16). During the first three decades, the records reveal high student interest in butter-making, but courses in condensed milk and ice cream were not listed until 1910-11.

Among the staff members during 1905-14, several were destined to become distinguished educators in the years ahead. The staff included E. S. Guthrie, Instructor in Butter-making; J. W. Decker, Professor of Dairying; Oscar Erf, Professor in Dairying; Robert B. Stoltz, Instructor in Dairying; Otto A. Kielsmeier, Instructor in Cheese-making; H. R. Gibson, Instructor in Cheese-making; W. L. Clevenger, Instructor in Cheese-making; and O. C. Cunningham, Instructor and Assistant Professor in Dairying; and N. B. Nystrom, J. C. Hedge, B. B. Herrick, and Fred Nobs, Assistants.

In this period, Professor Erf became head of the unit which was identified as the "DEPARTMENT OF DAIRYING" instead of "COURSE IN DAIRYING". Both special and degree courses were offered and in 1911, the Department gave instruction to a total of 262 students: 155 in regular two- and four-year courses, 78 in the Winter course in Agriculture, and 29 in the special Winter course in Dairying. The short course in Dairying was of two months duration and was taught in January and February.

In 1910-11, the dairy courses offered were (credit hours in parenthesis): Principles of Dairying (4); Farm Dairying (4); City Milk Supply (2, 2); Butter-making (2, 2); Elementary Dariying (for 2-year course); Ice Cream Making and Milk Condensing (5); Dairy Mechanics (3); and Advanced Dairying (3).

Professor Erf's annual report states "Creamery butter-making was in strong demand; Butter laboratory best equipped...; Courses in cheese-making, ice cream making, and milk condensing are gradually growing." He further stated that there was excellent demand for the products manufactured in the Department but expenses were $21,000 and returns $19,000 - thus resulting in a defict of $2,000.

In this period, O. Erf taught Dairy Fundamentals and Milk Condensing; O. C. Cunningham taught Ice Cream Making; R. B. Stoltz taught Hard and Soft Cheese-making and Market Milk; W. L. Clevenger taught Butter-making and Dairy Mechanics - and was in charge of the Dairy Plant.

Only limited research was being conducted on such subjects as (a) pure cultures for manufacture of fermented milk, (b) manufacture of cheese - primarily pimento and Camembert, and (c) effect of pasteurization of milk for butter-making. Professor Erf's report stressed the need for more space and equipment, and more instructors for concentrated milk, ice cream and soft cheese.

The decade, 1915-1925, produced continual adjustments in the academic program in dairy processing and manufacturing. There were 12 regular courses offered pertaining to milk and milk products. During 1919-20, 470 students enrolled in the Department's courses which included the following (enrollment in parenthesis after each course): Elementary Dairying (156); Dairy Production and Manufacturing (75); City Milk Supply (8); Butter-making (13); Cheese-making (5); Ice Cream Making (8); and Milk Condensing (16). The much lower enrollment in butter-making revealed the marked decrease in interest in this subject in contrast to the previous decade.

In 1921-22, the University adopted the quarter system (a change from the semester system), and the dairy curriculum, involving 12 courses, was restructured as follows (credit hours in parenthesis): Principles of Dairying (5); Farm Dairying (5); City Milk Supply (5); Butter-making (5); Dairy Practice (3-10); Soft Cheese Making (3); Hard Cheese Making (5); Milk Condensing (3); Ice Cream making (5); Dairy Mechanics (5); and Advanced Dairying (3-5). The program required a total of 190 hours for graduation. Supporting courses were required in Agricultural Chemistry, (including Dairy Chemistry) and Bacteriology (including Dairy Bacteriology).

During this decade, Oscar Erf served as Professor of Dairying, R. B. Stoltz was promoted to Assistant Professor in 1920-21 and to Professor in 1923-24, Arthur D. Burke and H. D. Drain were added as Instructors, and D. S. Kochheiser, Arthur New and Corwin Knowles served as Assistants.

THE MIDDLE YEARS:

The years 1925-30 were epochal for Dairy Technology, since they marked the birth of "THE DEPARTMENT OF DAIRY TECHNOLOGY". During the prior period, "THE DEPARTMENT OF DAIRING" included both dairy farm production and dairy products. The Dairy manufacturing sequence was first explicitly outlined in the University Catalog of 1929-30. During this year, in the report of the Department, it was stated that a reorganization of the academic program in dairying was in progress - which would result in a division of the farm and non-farm phases. In 1929-30, the work in dairy production was assigned to the Department of Animal Husbandry and that in dairy manufacturing and allied branches to a new "DEPARTMENT OF DAIRY TECHNOLOGY" under the leadership of Professor Robert B. Stoltz. In 1927-28, Oscar Erf and R. B. Stoltz were Professors, H. D. Drain, D. S. Kochheiser, and J. Lengacher, Assistant Professors, H. S. Albany, Instructor and J. Hoffman Erb was a graduate assistant.

The faculty salaries during 1920-1930 are of interest in light of the 1970 situation. During this period, the salaries were as follows: Professor/Department Head $4,250 to $5,000, Associate Professor $3,000, Assistant Professors $2,100 to $2,750 and Instructors and Full-time Assistants $1,800. There was little change in the salary scale over the ten-year span. The Department report of 1928-29 stated that Assistant Professor Drain resigned to accept an industrial position "at a large increase in salary". And the report continues "it is unfortunate that institutions of learning cannot compete in salaries with industrial concerns".

In this decade, research topics included such subjects as (a) factors affecting cream line of milk, (b) use or amount of rennet and flavor of American Cheese, (c) cream improvement and (s) Swiss cheese.

THE NEW DEPARTMENT:

In 1929-30, the name "DAIRY TECHNOLOGY" appeared officially for the first time in the University documents - and the professional degree, Bachelor of Science in Dairy Technology, became a reality. Reportedly, this was the first Department of Dairy Technology to be formed in the United States. The faculty listings were: R. B. Stoltz - Professor and Chairman; Oscar Erf - Professor; Lewis H. Burgwald - Associate Professor; J. Hoffman Erb - Instructor; and D. Kochheiser was appointed as the first man in the United States to serve as Extension Specialist in Dairy Technology. Of interest was the listed appointment of Otto F. Hunziker as Professor and H. G. Albany as Assistant presumably "without compensation". However, the budget allocated $100 for the former and $200 for the latter, evidently for advisory services.

In 1933-34, sixteen different courses were offered by the new Department: Principles of Dairy Technology, Testing of Milk Products, Soft Cheese Manufacturing, Hard Cheese Manufacturing, Butter Industry, Ice Cream Manufacturing, Condensed Milk and Milk Powder, Market Milk, City Milk Inspection, Dairy Engineering, Management of Dairy Plants, Dairy Products Judging, Special Problems, Dairy Seminar and Research in Dairy Technology.

In 1936-37, Professor Stoltz, Associate Professor Burgwald, and Assistant Professor Erb served as the teaching faculty. Two Dairy Plant Experience courses were introduced. These were Summer Quarter courses, each to which required 10 weeks of experience in an approved dairy plant plus a written report. Five credit-hours were given for each course. This innovation was a milestone in Dairy Technology education since they were the first such courses required in a department of this type for which credit was given.

The curriculum in 1936-37, for the Dairy Technology Degree, required 60 credit hours of Dairy Technology courses. Thirty-one of these credit hours were to be taken during the first two years, and included such courses as Principles of Dairy Technology, Testing of Milk Products, Butter Industry, Soft Cheese Manufacturing, Dairy Engineering, and Dairy Plant Experience. The advanced courses open to advanced undergraduate students and to graduate students included Management of Dairy Plants, Market Milk, Hard Cheese Manufacturing, Condensed Milk and Milk Powder, Ice Cream Manufacturing, Dairy Products Scoring, and Dairy Seminar.

W. L. Slatter was added to the faculty in 1939-40 and D. V. Josephson in 1945-46. The 1947-48 catalog has the following faculty listed: Professors Stoltz and Burgwald, Associate Professors Josephson and Slatter, Instructors or Assistants: Armstrong, Mitten, Nass, and Black. A course in Dairy Refrigeration was added to the curriculum.

The first era of the Department of Dairy Technology ended in 1948 with the untimely death of Professor Stoltz. Professor Stoltz was a pioneer in dairy education and in industrial practices; he had established an outstanding reputation for himself and for the Department. Under his guidance, there had been achieved an unusually close relationship between the Depart-

ment and the commercial industry. He was recognized as a "builder of men" and the alumni of the Department loved and respected him. The great loyalty of the graduates to the Department was a testimony to Professor Stoltz' leadership, dedication, and human touch. At a later date, and as a testimony of its affection, the Class of 1942 financed and dedicated a large portrait of Professor Stoltz which today is prominently displayed in the main office of the Department which he created and administered for 20 years.

THE NEW ERA:

The period of 1949-1960 was filled with many changes for the Department in terms of people, programs, and practices. In 1949, Ira A. Gould, Jr. previously at Michigan State University and the University of Maryland joined the Department as Chairman and Professor. The Catalog listed the following faculty for this year: Professors Gould and Burgwald; Associate Professor Slatter; Assistant Professor Mitten, Mr. Armstrong, Mr. J. A. Paxton, and Mr. B. T. Hullinger. Fred J. Greiner and Perry R. Ellsworth were serving as Extension specialists, the former being supported by the Ohio Butter Manufacturers Section of the Ohio Dairy Products Association.

W. J. Harper joined the Faculty as Assistant Professor in 1949, T. D. Harman and D. A. Seiberling as Instructors in 1951; J. T. Smith as Assistant Professor in 1953; P. C. Hintz as Instructor in 1956; C. L. Hankinson as Associate Professor; T. Kristoffersen as Assistant Professor; and Mr. H. A. Hartley as Instructor and Dairy Plant Manager in 1957. J. J. Betcher and M. Peoples became Instructors in 1958 and C. V. Morr in 1959. In the academic year, 1958-59, W. L. Slatter took an extended leave (4 years) to serve as a Dairy Technology specialist in India as a part of the University's foreign program.

For a brief time, during 1948-1952, a special academic program was made available for preparing students specifically for careers in field work. Basically, this was an inter-department program involving the Departments of Dairy Technology and Dairy Husbandry. Because of the limited objectives and vocational aspects of this program it was discontinued.

During the first decade of the "New Era" the initiation of a vigorous program in research grant support resulted in the creation of several full-time research positions, usually of a post-doctoral nature. Some of the scientists filling these positions have remained on the Department faculty.

Those who served in these positions at different times and their research areas were: W. J. Harper, (1949) Italian cheese; Harold J. Bassett, (1951) Dry whole milk; Khem Shahani, (1953) Microbiology and antibiotics; Thorvald Kristoffersen, (1955) Chemical-sanitizers; Charles V. Morr, (1957) Milk proteins; H. E. Kennedy, (1959) Microbiology and antibiotics.

Curricula/Course Reviews and Revisions: The academic objectives in this period were heavily oriented to curriculum and course adjustments as necessitated by the advances in the Dairy Food Industry. Intensive reviews by the faculty were made of all existing courses required of the majors in Dairy Technology and goals were established for providing the highest edu-

cational level possible for professionalizing the Department and the graduating students. These reviews resulted in strongly integrated professional programs with each course being dependent upon previous courses in the sequence. The discontinuance of the Dairy Chemistry courses in Agricultural Biochemistry (1957-58) necessitated the incorporation of more biological chemistry into the Department's own courses. To achieve more professional-level instruction type, all but the first course (Survey of Industrial Dairying) were deferred to later years in the academic program. This permitted more use in the Dairy Technology courses supporting disciplines on the Campus. Additionally, as the result of course consolidation and reduction in credit hours, less total credit hours in Dairy Technology were required of students fulfilling the requirements for the Dairy Technology Degree. These changes allowed the student greater flexibility in course selection from the supporting areas of science, engineering, and business.

Over the years, the changes in the number of Dairy Technology courses and in the College level of which they were provided reflect the actions taken to strengthen the academic program and to provide a professional-caliber education. In 1936-37, there were 17 Dairy Technology courses required of majors: eight of these were open to freshmen and sophomores and nine were offered for juniors, seniors, and graduate students. In contrast, for the curriculum for 1951-52, only one course (Principles of Dairy Technology) was available for freshmen, three for sophomores, (Testing of Dairy Products, Butter Industry and Grading of Dairy Products). The other six courses required of the Dairy Technology major were restricted to Junior, Senior and graduate students. Two new graduate level courses were introduced: Technical Control of Dairy Products and Graduate Seminar. Two engineering courses were offered: Dairy Refrigeration (a sophomore-level course) and Dairy Plant Equipment and Buildings (for advanced undergraduates).

The other Dairy Technology courses offered for upper classmen and graduate student in 1951-52, with their credit hours, were as follows: Market Milk (5), Concentrated Milk Products (3), Ice Cream Industry (5), Cheese Industry (6) (separate lecture and laboratory courses), Junior Seminar (3) (one-hour for successive quarters for senior students), Special Problem (3-15). This program remained essentially unaltered for the remainder of the 50's, with the exception of title changes reported in 1958-59: (a) PRINCIPLES OF DAIRY TECHNOLOGY was changed to SURVEY OF INDUSTRIAL DAIRYING, (b) DAIRY PLANT EXPERIENCE was changed to DAIRY INDUSTRY APPRENTICESHIP, and TESTING OF DAIRY PRODUCTS became DAIRY PRODUCTS STANDARDS AND ANALYSIS. The course BUTTER INDUSTRY was upgraded to an advanced level.

The first course in the Dairy Engineering sequence was offered by the Department of Agricultural Engineering and the course "Marketing of Dairy Products", provided by the Department of Agricultural Economics and Rural Sociology, was included in the requirements for Dairy Technology majors. The interdepartmental graduate Seminar in Nutrition and Food Technology was provided for the first time in 1954. This was a cooperative program shared by all food and and nutrition-oriented departments affiliated under the auspices of the University's Institute of Nutrition and Food Technology.

Two faculty members retired and became Emeriti: Professor L. H. Burgwald in 1954 and Asst. Professor T. V. Armstrong in 1959. These men had been long, loyal, dedicated, and productive contributors to the many-faceted programs of the Department. During their later years of service, both were

honored by the Alumni at separate events, at which they were presented gifts and cash awards as a token of esteem and affection.

At the end of this decade (1958-60), the University structured a group of courses in the humanities and in the social science and a minimum of 15 credit hours in each was required of all students. The total degree requirements were increased from 200 to 210. By this time, the course material in Dairy Technology had changed substantially. Emphasis had been changed from processes and manufacturing methods, to the role of chemistry, microbiology, engineering, and management and to the application of their principles to the dairy food industry. The Dairy Technology program was comprised of the following (hours in parenthesis): Credit Military Science (12), Physical Education and Health Education (4), Survey of Agriculture (1), English (9), Chemistry (20), Biology (including Botany or Zoology and Bacteriology) (16), Mathematics (10), Physics (10), Accounting (5), Agricultural Engineering (5), Agricultural Economics (3), Dairy Science (husbandry) (5), Dairy Technology (including introductory, advanced operation, management, and seminar courses) (45), Humanities Option (15), Social Science Option (15), and Free Electives (35).

THE LAST DECADE:

During the period 1960-1969, several additional faculty reviews of the course offerings were conducted aimed at furthering the professional concept in terms of curriculum structuring, course titles, course integration, and upgrading of subject matter. Only two courses were now being offered for freshmen and sophomore students: SURVEY OF INDUSTRIAL DAIRYING (for freshmen) and EVALUATION AND SELECTION OF DAIRY PRODUCTS (for sophomores). The advanced sequence for majors began at the Junior level and involved the following alterations: (a) DAIRY PRODUCTS STANDARDS AND ANALYSIS was changed from 5 credits to 6 credits, (made possible by having separate courses for lecture and laboratory), (b) MARKET MILK was separated into a lecture (3 credits) and a laboratory course (3 credits), (c) The butter and cheese courses were combined into one BUTTER AND CHEESE INDUSTRIES, with separate registrations for lecture (3 credits) and laboratory (3 credits).

In 1960-61, the faculty was composed of Professors Gould, Burgwald (Emeritus), Slatter (On Leave); Associate Professor Harper; Assistant Professors Armstrong (Emeritus), Kennedy, Kristoffersen, Trautman; Instructors Hartley, Cole, and Randolph.

In this period, research faculty included K. S. Ramachandran who conducted research on the chemistry of chocolate flavor in frozen desserts, and J. H. Martin and Emil M. Mikolajcik, Microbiologists, who studied the effect of antibiotics on the microflora of milk and the sporeforming microorganisms in milk and milk products.

In 1962-63, the University Bulletin listed the following faculty: Professors Gould, Burgwald (Emeritus), Harper, Slatter; Associate Professor Kristoffersen; Assistant Professors Armstrong (Emeritus), Mikolajcik, Morr, Tharp; Instructors Hartley, Heldman, and Randolph. During 1960-65, M. E. Gregory, R. H. Kleyn, and J. H. Martin served successively as Assistant Professors with principal responsibilities in extension work. In 1965, J. L. Blaisdell and P. M. T. Hansen joined the faculty as Assistant Professors, the former to specialize in process engineering, and the latter

to conduct research on milk proteins. In 1965, J. P. Kenyon joined the staff as Instructor and Dairy Plant Manager and, in 1967, D. G. Vakaleris was appointed as Associate Professor. In 1968, W. L. Slatter again returned to foreign service, this time to assume responsibility for the Food Technology phase of the University's program in Brazil.

NEW CONCEPTS AND APPROACHES:

During the 1960-70 period, the faculty took cognizance of the dramatic diversification of the Dairy Industry into the total food field and, consequently, initiated appropriate action to constantly adjust the depth and breadth of subject matter provided in the Dairy Technology academic program, and the teaching approaches being taken. Increasing emphasis was placed on the teaching of principles that would have broad significance and application to all food operations. The responsibilities of Dairy Technology teaching, research, extension, and service were redefinded in terms of the "Dairy Food Industry" with the "Dairy Food Industry" being recognized as encompassing "those foods comprised entirely or partially of milk, milk products, or milk components; those in which milk, milk products of milk components are utilized at one stage or another in the processing, manufacturing, or preparation of the food; and those which are made to resemble milk or milk products". This identification of the scope of the dairy food industry, and the related role of the Department, gave cognizance to the interest in and the development of a wide spectrum of new foods - not all of which would have been considered under the traditional concepts of the past.

Descriptive literature designed to attract both undergraduate and graduate students to the Department were prepared in which reference was made to programs in "Dairy Food Science, Engineering, and Management". Thus, it was made clear that these three important facets provided the Dairy Technology courses with an unusually strong educational foundation. The flexibility of the program was such as to create an opportunity for an undergraduate student to obtain additional specialization in science, engineering, or business depending upon his special interest.

Dairy Food Engineering: A major adjustment during this last decade involved the courses in engineering. Throughout the history of the Department, recognition was always given to the fact that engineering was an integral part of the educational program. Consequently, the Department curriculum, from the beginning, contained courses dealing with this subject. During the 50's and into the 60's, the curriculum included three courses in dairy-related engineering: a basic engineering course in Dairy Engineering offered by the Department of Agricultural Engineering, and two courses (one in Dairy Refrigeration and one in Dairy Plant Equipment and Buildings) offered by the Department. On request of the Department, the title and subject content of the course offered by the Department of Engineering was changed to "Food Processing Engineering" in order that it would be suitable for all Departments of the College who were concerned with preparing students for careers in some phase of the Food Industry. In the early 60's, as a further step in this direction, the Department initiated action to transfer its engineering courses to the Department of Agricultural Engineering and to support the development of a strong three-course sequence in "Food Processing Engineering". This was

done in recognition of the need for heavier emphasis on engineering in keeping with the development of large, automated food plant operations. In 1964, J. L. Blaisdell was added jointly to the staff of Dairy Technology and Agricultural Engineering to develop the food processing engineering program.

Over the previous years of the 50's and 60's, several faculty members of the Department served with distinction in providing the Dairy Technology students with a strong background in dairy food engineering. These included J. L. Mitten, D. A. Seiberling, M. L. Peeples, J. J. Betscher, D. R. Heldman, and W. J. Harper. The success of many graduates of the Department in various areas of engineering attests to the successfulness of the program.

ALTERNATIVE DEGREE PROGRAMS:

Food Technology Option: In 1946, the Institute of Nutrition and Food Technology, of the University, was established. This was conceived as a multidisciplinary unit, to which any faculty member interested in food and/or nutrition could become affiliated. This was initially conceived as a means of creating a better relationship and more understanding between faculty members having a common interest and to promote research and graduate education in Nutrition and Food Technology. Several faculty members of the Department served as member of the Institute over a period of years. At some later date, the Curriculum Committee of the Institute, proposed and had accepted an undergraduate degree program designated as "Food Technology". This was to be administered by an inter-departmental committee. The curriculum was designed so that a student would take a limited number of courses in each of the Departments or Schools in Agriculture offering food courses, and could specialize in one of these areas by selecting additional courses. In 1962, the Department of Dairy Technology adopted the Food Technology program as an alternate curriculum which would lead to the Bachelor of Science Degree in Food Technology. To date, few Dairy Technology students have chosen to elect this option.

Agricultural Options: The College of Agriculture adopted specific curricula for students having different interests in 1959. This resulted in four distinct agricultural programs: General Agriculture, Agricultural Industries, Agricultural Science, and Agricultural Social Science. In this program, a student could select a major in a department, in which he would specialize, but would follow the basic course program which would lead to a Bachelor of Science Degree in Agriculture. The required courses in these programs were more heavily agriculturally-oriented than those required in the professional Dairy Technology curriculum, and the student was not required to take less courses in Dairy Technology than those on the professional program. In the early 60's, the Department of Dairy Technology became a part of this program, and offered options in the areas of Agricultural Industries and Agricultural Science. To the year 1970, some seven Dairy Technology students registered for one of these alternative programs.

Journalism Option: In 1967, the Department further broadened its educational offerings to include a major in Agricultural Journalism with a minor in Dairy Technology. Through 1969, no student had elected this program.

Course and Title Changes: Changes in course titles as well as in course content were made in 1969-70, with the view of adjusting these to the "Food Industry" concept. By College action the credit required for graduation had been decreased from 210 to 196. The basic courses required of Dairy Technology majors and the pertinent related information follow:

Fundamentals of Dairy Foods and Their Industries. (5 crs.) Freshman level. Gould, Lindamood; Dairy Foods Industries Apprenticeship. (3 crs.) Freshman level. Kristoffersen; Fundamentals of Food Engineering. (5 crs.) Junior level. Offered by the Department of Agricultural Engineering. Blaisdell; Sensory Evaluation and Selection of Dairy Foods. (3 crs.) Sophomore level. Kristoffersen.

Refrigeration Engineering in the Food Industry. (5 crs,) Junior level. Offered by the Department of Agricultural Engineering. Blaisdell; Field Studies of Industrial Problems. (3 crs.) Junior level. Kristoffersen; Individual Studies. (3-5 crs.) Junior level. Faculty; Dairy Foods Standards and Analysis. (3 crs.) Junior level. Kristoffersen, Hidalgo; Dairy Foods Standards and Analysis: Laboratory. (3 crs.) Junior level. Kristoffersen and Hidalgo.

Marketing Dairy Products. (3 crs.) Junior and Graudate level. Offered by the Department of Agricultural Economics. Hahn; Food Engineering Design and Control. (5 crs.) Senior and Graduate level. Offered by the Department of Agricultural Engineering. Blaisdell; Technical Control of Dairy Foods. (5 crs.) Graduate level. Harper; Fluid Dairy Foods. (3 crs.) Senior or Graduate level. Harper; Fluid Dairy Foods: Laboratory. (3 crs.) Senior or Graduate level. Harper; Lipid and Fermented Concentrated Dairy Foods. (5 crs.) Senior or Graduate level. Kristoffersen; Concentrated and Frozen Dairy Foods. (5 crs.) Senior or Graduate level. Vakaleris.

Individual Studies. (3-5 crs.) Senior or Graduate level. Faculty; Seminar. (3 crs.) Senior level. Gould, Harper; Management of Dairy Foods Operations. (5 crs.) Senior level. Gould, Kenyon and Lindamood.

Seminar. (1 cr.) Graduate level. Faculty; Research Methods. (3-5 crs.) Graduate level. Faculty; Interdepartmental Seminar in Nutrition and Food Technology. (1 cr.). Faculty; Research in Dairy Technology: Thesis. (Arr.) Graduate level, M.S. Degree; Research in Dairy Technology: Dissertation. (Arr.) Graduate level. Ph.D. Degree.

Faculty and Faculty Responsibilities: The faculty listing for 1969-70 included Professor and Chairman, I. A. Gould; Professors W. J. Harper, T. Kristoffersen, and W. L. Slatter (on leave); Associate Professors P. M. T. Hansen, E. M. Mikolajcik, and D. G. Vakaleris; Assistant Professors J. L. Blaisdell, J. E. Hidalgo, J. P. Kenyon; Instructor and Extension Specialist J. B. Lindamood.

At this stage of history, the areas of responsibility and specialization of the staff were as follows: Gould - Administration and industrial management; Harper - fluid dairy foods, biochemist, instrumental analysis, flavor specialist, automated fluid product systems; Kristoffersen - microbiologist, fermented and lipid foods, adult education; Hansen - physico-biochemist, food proteins; Mikolajcik - microbiologist, bacterial metabolism; Vakaleris - biochemist, emulsions and food systems; Hidalgo - physico-biochemist, analyst, food component interactions; Blaisdell - Food Process

Engineer, systems and materials engineering; Kenyon - Dairy Plant Manager, industrial management. As the decade ended, the majority of the faculty served on joint appointments between the University and other units. In addition to University appointments, the following joint appointments were in effect: Cooperative Extension Service: Gould, Kristoffersen, and Lindamood; Ohio Agricultural Research and Development Center (Wooster): Gould, Harper, Kristoffersen, Hansen, Mikolajcik, and Vakaleris; Ohio State University Research Foundation: Hansen and Mikolajcik.

STUDENTS

IN

REVIEW

THE UNDERGRADUATE PICTURE

"One must start somewhere
If one is to get anywhere."

The number of students who have specialized in Dairy Technology over the years is reflected in the number of graduates for the period 1906 through June, 1969, as presented in the following table:

Number of Graduates Who Specialized in Dairy Technology

Year	No.	Year	No.	Year	No.
1906	1	1929	4	1948	22
1910	1	1930	4	1949	24
1912	3	1931	8	1950	47
1913	4	1932	12	1951	19
1914	14	1933	9	1952	16
1915	8	1934	16	1953	18
1916	8	1935	15	1954	14
1917	10	1936	17	1955	11
1918	4	1937	13	1956	14
1919	2	1938	27	1957	10
1920	11	1939	28	1958	10
1921	9	1940	21	1959	15
1922	9	1941	23	1960	5
1923	8	1942	28	1961	8
1924	3	1943	10	1962	7
1925	5	1944	2	1964	5
1926	5	1945	3	1965	8
1927	7	1946	4	1966	9
1928	4	1947	22	1967	8
				1968	10
				1969	7
				Total --	669

Of the 669 graduates, 317 received the professional degree, Bachelor of Science in Dairy Technology. Although the early records may be lacking somewhat in accuracy, an analysis of these yearly results reveals a cyclic trend in the number of graduates. For example, for a given period of the history, there were peaks of comparatively high number of graduates. This is revealed more clearly by the following data:

Years	Number of Graduates	Years	Number of Graduates
1906 - 1919	- 55*	1940 - 1949	- 159
1920 - 1929	- 65	1950 - 1959	- 174
1930 - 1939	- 149	1960 - 1969	- 67

*Represents 14 years; No graduates listed for 1907, 1908, 1909, and 1911.

The period of 1930 to 1959 had the highest average number of graduates per year, with the largest peaks (annual graduations above 20 students) in the 1938-1942 and the 1947-1950 periods. In the 30's, the trend to a higher number of graduates began in 1932, reached a relatively high plateau in 1938-1942, which was followed by a very low period in 1944-1946. The trend in numbers of graduates moved up sharply again in 1947, and reached the all-time high in 1950, with 47 graduates. Thereafter, the number of graduates has generally continued downward, with a consistently low level of graduates being maintained in the 1960's. In terms of graduates, the 1960-69 period is comparable to the early 1920's. The bulge in graduates in 1950 resulted from the enrollment of a large number of World War II veterans.

Although records are not available to reveal the relationship between number of students who enrolled in Dairy Technology and those who completed the four-year program, it is quite likely that the relationship was highly satisfactory prior to 1950. During the period, many of the Dairy Technology courses were offered during the first two years of the curriculum; a situation favorable for retention of the beginning students on the program. Also, since these courses were not based on other College prerequisites, they would have been more vocationally oriented; thus further favoring student retention. Beginning in the early 50's, in order to more fully professionalize the curriculum and in keeping with University policies, the Dairy Technology courses were moved almost entirely to the third and fourth year of the curriculum. Consequently, only those students fully committed to the Dairy Technology program would be expected to persevere to the junior and senior years.

The actual student enrollment in Dairy Technology or in the optional programs in Agriculture for the years of 1961 to 1968 is given in the following table for both the Autumn and Spring Quarters:

	Autumn				Spring			
	Dairy Tech.	Agr. Ind.	Agr. Sci.	Total	Dairy Tech.	Agr. Ind.	Agr. Sci.	Total
1961	28	3	0	31	34	3	0	37
1962	30	2	0	32	29	2	0	31
1963	33	0	0	33	33	2	0	35
1964	44	0	0	44	42	0	0	42
1965	37	1	0	38	33	2	0	35
1966	28	1	0	29	23	0	1	24
1967	23	0	1	24	20	0	0	20
1968	15	0	0	16	17	0	0	17
Total	238	7	1	247	231	9	1	241

During this eight-year period, the registration of Autumn Quarter students in Dairy Technology was 247. In contrast, 57 students graduated during this span of years. This comparison reflects the high attrition of the students and is evidence that only a fraction of the beginning students complete the four-year program. Essentially all of this loss in student enrollment occurs during the first two years and by far the largest share is due to academic failure. This loss of students between the beginning and end of the academic program is somewhat greater than that experienced in the University as a whole.

The size of classes in Dairy Technology courses at the third and fourth-year level is not necessarily related to the number of graduating seniors for a given period. In recent years, the sizes of the classes have been increased substantially by registration of non-Dairy Technology undergraduate students and the Dairy Technology foreign graduate students.

The graduate record does indicate that, other than for 1950, there has never been an over-abundance of students in Dairy Technology. If one were to assume that the desired graduating class size should not be less than 15, then it may be noted that in only thirteen of the 69 years was this criterion satisfied. The logical conclusion to be drawn is that, historically, Dairy Technology has not had large classes and seldom, if ever, has the Department had a sufficient number of graduates to satisfy the market demand.

DAIRY TECHNOLOGY STUDENT ORGANIZATIONS

"Pleasant memories of University life
Most often are those
Of non-academic nature."

Early records show that the first organization of dairy students on The Ohio State University Campus was the Progressive Dairy Club which was organized in the Autumn of 1921. C. L. Knowles was the first President (1921-22) and Roger Sherwood and H. H. Weiser were two of the early student leaders. In 1928, the name was changed to the American Dairy Science Association and the Organization became a student affiliate chapter of the parent Association. When the Department of Dairy Technology was established in 1929, the students in this Department and the Dairy Husbandry students continued to meet together in one club.

Available records of the organization's activities in the 20's and 30's are scant but they do reveal that club members were active in intramural athletics, judging contests, and fund raising ventures. Dairy Technology students who served as President of the Association during this period included Henry J. Apple, Willard C. Boyer, John H. Brockschmidt, George R. Mapp, George W. Dew, Ross Winning, Paul R. Alleshouse, Virgil J. Klopfer, and Ben D. Varner.

In the 1940's, meetings of the Association were held twice monthly. For one of the meetings each month the production and manufacturing sections would meet separately and the educational programs for these meetings were selected on the basis of interest to the group involved. The combined monthly meetings were highlighted by programs of interest to both groups. In addition to the educational programs, the members enjoyed judging team participation and various team sports in the University Intramural Leagues. Fund raising projects consisted mainly of serving meals and selling refreshment to different organizations who came to the campus for meetings. Social activities of the Association included picnics, banquets, dances, and employer-employee get-togethers where members of the Club were hosts to their summer employers for lunch and a University football game in the afternoon.

In 1942, the A.D.S.A. members felt that some form of recognition should be given Professor R. B. Stoltz for his thirty years of service to the University and to the Dairy Industry. They arranged and executed an Anniversary Banquet to which 225 students, alumni, members of the faculty, leaders of the Dairy Industry and friends came to dine in his honor. Former dairying teacher and writer, Otto F. Hunziker gave the Testimonial Address and an Appreciation Booklet dedicated to Professor Stoltz was published. The booklet was entitled "The Dairy Technologist" and contained sections on the life of R. B. Stoltz, the Dairy Technology Faculty, Graduate and Senior students in Dairy Technology, the Student American Dairy Science Association, the Anniversary Banquet and Testimonial Address, the Department of Dairy Technology, former Dairy Products Judging Teams and the "History of Dairying".

Dairy Technology students who served as President of the Association in the 40's included Elden Yohe, Ward K. Holm, Michael F. Swinehart, Wendell H. Botkin, Jr., Charles E. Fisher, J. Robert Derry, William R. Zink, and J. Paul Cooper.

In 1949, the O.S.U. Student Branch of the American Dairy Science Association was reportedly the largest in the world with approximately 100 members.

In both 1949 and 1950 the Club published "The Student Dairyman". These were the results of great effort on the part of the students. They were 56 pages in length and gave an excellent treatment, by words and pictures of the students, faculty, and alumni of both the Dairy Technology and the Dairy Husbandry Departments. The 1949 issue was dedicated to Prof. R. B. Stoltz, and the 1950 issue to the members of the Club "who gave their lives in World War II". The 1949 issue emphasized the fact that this represented the Diamond Jubilee Year of the Ohio State University. Richard E. Lewis was Editor and J. Paul Cooper was Business Manager of the 1949 issue whereas Dale A. Seiberling and George H. Kishman were Editor and Business Manager, respectively, of the 1950 publication. Both of these publications were financed by selling advertizing to the dairy organizations in Ohio.

In the decade of the 50's, educational programs, with outstanding speakers from industry and universities, were still important functions of the Association and its members continued to participate in judging team activities, athletic and social events, and fund raising projects. In addition, the Dairy Technology Section of the Association and the Department held student-faculty mixers to help new students get acquainted with the older students and the Faculty and to hear of the activities of the student organization. During this period, Honorary Membership in the Ohio State University Student Branch of the American Dairy Science Association was extended to Professor L. H. Burgwald and Dr. Walter L. Slatter for their unselfish devotion to the student organization.

In the fall of 1957, the students in Dairy Technology withdrew from the O.S.U. American Dairy Science Association and formed the Dairy Technology Club. This action was due, in part, to the diverse interests of students in the two disciplines. Dairy Technology students who served as President of the American Dairy Science Association and the Dairy Technology Club during the 50's were R. E. Josephson, Bert W. Taylor, James J. Mindling, Eugene J. Krajnak, Ronald E. Walters, Paul L. Culler, and Edward M. Stagney.

The Dairy Technology Club was one of two organizations exclusively for Dairy Technology majors which existed during the late 40's and in the 1950's. On May 25, 1949, in an informal meeting of the Senior Class in Dairy Technology, a motion was made and passed to form a new student organization on campus, a Dairy Technology Toastmaster's Club. The first official meeting of the organization was June 22, 1949. The purpose of the club was "to gain experience and skill in the art of public speaking and to further student fellowship". Each meeting consisted of three

prepared talks and three impromptu talks by members. Membership in the organization was limited to Juniors and Seniors in the Department.

The first president of the Dairy Technology Toastmaster's Club was Raymond D. Peters and Thomas D. Harmon was the Faculty Advisor. Existing records do not give the names of all students who were presidents of the Toastmaster's, however, it is known that Wallace G. Christman was President in 1957-58, Robert J. Corey in 1958-59, and D. R. Heldman in 1959-60, when Milton L. Peeples was the Faculty representative. Due to decreasing enrollment in Dairy Technology majors and the limited time available for student activities, the Toastmaster's Club re-combined with the Dairy Technology Club in 1960.

The Dairy Technology Club served as the student organization for Dairy Technology majors until 1967. During this time its members were active in many of the Department's programs, Student-Staff Mixers, Homecoming Brunch, Career Day, and Exploratory meetings, in addition to the Club's educational, recreational, and social programs. The list of students who served as President of the Club during the 1960's includes R. J. Klausing, John G. Murray, John P. "Jack" Davis, Charles R. Miller, Robert J. Kosman, Thomas R. Greenlee and William P. Capozello. In the spring of 1967, the Dairy Technology Club was changed to "The Dairy Technology Forum". The Forum was designed to foster closer student-staff relationships and more effective programs. Under the leadership of Arthur M. Beery (1967-68) and Dennis M. Frank (1968-69), the Dairy Student Forum served the students well.

The faculty members who have served as advisors to the clubs of the Department of Dairy Technology through the years includes: L. H. Burgwald, W. L. Slatter, C. L. Hankinson, W. J. Harper, D. D. Cole, E. M. Mikolajcik, J. H. Martin, I. A. Gould and J. B. Lindamood.

The Dairy Technology student organizations, as official Student Affiliate Branches, have maintained a close relationship with the parent American Dairy Science Association and have been the recipients of honors and awards from the national organization. The student organization in 1956 was cited at the meeting of the American Dairy Science Association for its outstanding scrapbook portraying the year's activities and received a Certificate of Excellence. The Club was also awarded Certificates of Merit in 1958 and 1968 and Certificates of Honorable Mention in 1962 and 1967. Dr. W. L. Slatter was the recipient of the outstanding Student Affiliate Advisor Award in 1965 and the Graduate Student Scientific Paper Award in Dairy Manufacturing ($100 and Certificate) was won by Particia L. Crater in 1964 and Paul B. McNulty in 1968. Gordon C. Kresheck and Patrick J. Gaffney placed second in 1961 and 1965, respectively.

In the 1960's, student delegates attended the annual meetings of the Association in every year but 1966 and Keith Jenkins served the Student Affiliate Branch as Second Vice-President in 1961-62 and Dennis M. Frank as Third Vice-President in 1967-68. The Dairy Industry Forum was co-host to the National Student Branch during the Sixty-third Annual Meeting of the American Dairy Science Association at The Ohio State University, June 16-19, 1968, and Dennis M. Frank, Forum President, served as Chairman of the Student Affiliate program.

Dairy Technology student organizations have served a vital function in the education of many of the Department's graduates. The educational programs, field trips, social events, leadership and service activities, association with education and industry leaders and the opportunity to develop poise and self confidence have all contributed much to the education and experience of those students who have actively participated.

DAIRY PRODUCTS JUDGING TEAMS

"No finer way exists
To build friendships and loyalty
Than by team effort
In competition."

A significant activity of the faculty and students throughout the period of 1916 to 1969 was the participation of a three-member team in different students' dairy products judging contests. These included the National Intercollegiate Contest, the Eastern States Dairy Products Judging Contest, and the Mid-West Dairy Products Judging Contest. The National Contest was the only one to persist over the total period.

The Eastern Contest, scheduled in September as a part of the Eastern States Exposition in Springfield, Massachusetts, appeared to be viable and to have usually 8-12 participating teams during the 1935-1945 period. Most of the competing teams were from the New England States, but Pennsylvania State University, Cornell University, Michigan State University, and the Ohio State University frequently participated. This was used by many coaches as a training event for the National Contest held usually in October.

The Mid-Western Contest, held in Chicago, is of more recent vintage, apparently coming into existance in the mid-50's - and being held periodically since that time. This contest, sponsored by the Chicago Dairy Technology Society, was scheduled just before the International event, and, as was the case earlier for the Eastern Contest, was used by many coaches as a training event for the International contest. The records reveal that the OSU team competed in 1954, 1955, 1956, 1957, 1958, and 1961. The number of competing teams ranged from seven to eleven.

In its participation in the Mid-West contest, the Ohio Team was second in all products in 1954 and 1955, was first in cheese judging in 1954 and 1955, second in milk and butter judging in 1954 and 1955, and second in milk judging in 1956. Individuals who ranked within the first three placings in these contests were: Thomas M. Artz (3rd all products and in cheese - 1954), Ronald Perkins (2nd in all products and in cheese, 3rd in milk - 1955), Richard F. Flowers (1st in ice cream - 1956), Lawrence Neer (1st in milk and 2nd in cheese - 1961).

In the National (International) Judging Contest, Ohio has participated in every event from 1916 to the present. No contests were held during the 1942-1946 period.

During the 1916 - 1926 period, the number of competing teams ranged from three (1917) to 13 (1926). Only butter was judged in the first contest - and the team was composed of D. S. Kochheiser, John Shaffner, and R. L. Bushey. During this decade, the Ohio team won first in all products in 1920, 1921, and 1922, and won nine firsts for the individual products (Butter once, Cheese five times, Milk three times). For the team members, those placing first in all products included Arthur H. New (1920), Harley Jones (1921), and E. M. George (1922). The members of

the 1921 team, Harley R. Jones, C. C. Darnell, and H. L. Krohm, placed first, second and third, respectively, in the contest, and the team won first place honors in milk, butter and cheese. During this period, those who were first for individual products included D. S. Kochheiser (milk - 1917); Harley R. Jones (cheese - 1921); W. O. Christopher (cheese - 1922); J. C. Skidmore (milk - 1923); W. B. S. Woodward (milk - 1925) and W. P. Stoops (milk - 1926).

In the period 1927 to 1940, the number of teams in the contest ranged from 10 (1931) to 23 (1938). The majority of the contests had from 15 to 19 teams entered. During this period, the Ohio team was first in all products in 1929, 1933, 1934, 1936, 1937, and was first seven times in the judging of individual products (Cheese once, Milk three times, ice cream three times). Individuals placing first in all products or for a given product were as follows: Gale R. Kasler (all products, milk and cheese - 1929); Ross Willing (milk - 1935); H. P. Smith (Cheese - 1935); Joseph Adams (all products - 1936); Russell Fifer (milk - 1936); D. C. Roahen (all products and ice cream - 1937).

Of the six contests held in the next decade (1941 - 1950), the number of competing teams ranged from 22 to 26. The Ohio Team was first in all products and first in milk judging in 1941. Team members who placed first were as follows: John R. Kohl (all products - 1941); James R. Ebright (milk - 1941).

In the 1951-1960 contests, the Ohio teams won first for all products in 1952 and 1953 and achieved first place ranking in cheese judging in 1957, milk, ice cream and butter in 1953, butter in 1956, ice cream in 1957, and milk in 1959. Team members who won first ranking included the following: E. J. Haynes, Jr. (all products - 1952); B. W. Taylor (cheese - 1952); Jack H. Fowler (all products - 1953); Ralph L. Paul (milk - 1953); Robert C. Milkie (butter - 1953); Ronald Perkins (ice cream - 1955).

Special note should be made of the 1953 team composed of Jack H. Fowler, Ralph L. Paul and Robert C. Milkie, who placed first, second and third, respectively, in the contest in which 23 teams (69 contestants) competed. Also, during this 1951-60 period, the Ohio team ranked no lower than fifth in five of the ten annual events.

In the 60's, the number of teams in the contest varied from 19 (1966) to 28 (1962). The team of 1964 composed of Duane S. Snoddy, Thomas R. Greenlee, and Roger B. Sauer was the winner of the contest having 20 team entries. This team also placed first in milk judging. The 1966 team won the butter contest, the 1967 team the milk contest, and the 1968 team the cottage cheese event. During the years of 1961-1968, the following individuals won first-place awards; Lawrence Neer (milk - 1961); David H. Brown (all products - 1961); Robert J. Kosman (milk - 1963; Duane S. Snoddy (all products and milk - 1964); David R. LeVally (butter - 1966); Arthur M. Beery (milk - 1967); Marvin J. Stammen (cottage cheese - 1968).

The foregoing presents an unusual success story for the Ohio dairy products judging team of the past - achieving perhaps the best total

record of any University which has completed continuously in the National contest. Much credit is due not only the students who sacrificed to prepare themselves for the contests, but to the faculty members who assumed the responsibility for this important extra-curricular activity. In the earlier years following the establishment of the Department, L. H. Burgwald and J. H. Erb coached the teams; in the later years, W. L. Slatter and T. Kristoffersen served at different periods in the coaching capacity. The records reveal that these faculty members have all consistently produced teams that have brought much credit and an enviable reputation to the Department and to the University.

SCHOLARSHIPS

AND

RECRUITMENT

SCHOLARSHIPS AND RECRUITMENT

"The young of today will determine
The future of an Enterprise tomorrow.
Without an entering stream of qualified youth
The Enterprise will disintegrate and disappear."

Almost from its beginning, the Department has been active in programs designed to attract qualified youth to enroll in the Dairy Technology program and thus be prepared for careers in the Dairy Food Industry. In these programs, much assistance was provided over the years by dairy industry leaders and organizations. This assistance has been in the form of active recruitment, by cooperation with the Department in its communication and recruitment programs, and by financial support in the form of scholarships, grants and awards for high school graduates and advanced undergraduate students already enrolled in the University.

THE BEGINNING:

Early men of vision were Everett Antrim, Furnas Ice Cream Company, Columbus; John Schubacher, Sanitary Milk Company, Canton; and Henry Page, Page Dairy Company, Toledo. In the spring of 1930, the Department received requests from industry for 15 Dairy Technologists, but only three were graduated. In order to induce more students, especially from cities, to major in Dairy Technology these executives each offered a $400 scholarship to a qualified high school graduate in their respective cities. In 1931, Mr. Antrim and Mr. Page were joined by L. A. Blatzer, Nosker Ice Cream Company, Canton and F. J. Andre, Telling-Belle Vernon Company, Cleveland in offering scholarships. An examination was given in four cities and the scholarships were granted to four of the 46 applicants. Several of the young men who took the examination but did not win a scholarship also enrolled in the Department. Following the lead of these pioneers, other industry leaders and organizations subsequently made noteworthy contributions to the Dairy Technology student recruitment programs.

In the forties, a number of Dairy Technology Scholarships were established. At the meeting of the Cleveland Dairy Technology Society on April 10, 1946, action was initiated to establish Dairy Technology Scholarships and to raise the necessary finances by solicitating Associate Members from dairy companies. President Kenneth Wallace of the Society, and D. A. Charles, Chairman of the Society's Education Committee were among those providing leadership in this venture.

Funds were raised and in 1946, the Society (later the Northeastern Ohio Dairy Technology Society) established an endowment fund of $5,000 in the Ohio State University Development Fund, the interest of which was to be used for scholarships. Additionally, through the activity of the members of this Society other scholarship programs in Northeastern Ohio were initiated by the Akron Milk Dealers Association and the Stark County Milk Distributors Association. These were administered through the Society and were continued for several years. Considerable credit for continued support by the Stark County group is due Lee Cavitt, for many years Secretary of that organization.

Scholarship activities were also undertaken in Central Ohio, and in about 1949, scholarship support was initiated by the Columbus Milk Distributors Association. In 1949, five freshmen students entering the Dairy Technology program at the University received $150 scholarships: three being supported by the Cleveland Dairy Technology Society, one by the Akron Milk Dealers Association, and one by the Columbus Milk Distributors Association. In 1950, five scholarships were again provided: two by the Cleveland Society, one by the Akron Milk Dealers Association, one by the Stark County Milk Distributors Association and one by the Columbus Milk Distributors Association.

In the middle and late 40's, special endowment funds were established in the Ohio State University Development Fund for the purpose of providing continuous support for Dairy Technology Scholarships or to provide awards for superior individual performance of students engaged in the University program. In 1945, an anonymous gift of $5,000 established the Robert B. Stoltz Dairy Technology prize, the income of which was to be used for an outstanding student or students in the Department. In 1947, the Ohio Dairy Boosters Association Scholarship Fund was established for the purpose of providing scholarships and/or a special award to a student in Dairy Technology who best exemplified the "Booster spirit" through leadership, attitude, and academic activities. This fund was added to in later years, to reach the amount of $4,000 in 1968.

In 1949, the Robert B. Stoltz Memorial Fund was established by gifts from friends in memory of Professor Stoltz, with the income to be used for scholarships for both graduates and undergraduate students and for related purposes. By 1968, the principal of this fund was $7,600.

All of these special endowment funds aided enormously in providing a firm foundation for the recruitment and scholarship program and in encouraging and stimulating the students enrolled in the Department by the special recognitions which were made possible. Since the inception of the Stoltz Prize and the Boosters Association Fund, the students selected for these awards on the basis of superior performance have been formally recognized at the banquet held in connection with the Annual Convention of the Ohio Dairy Products Association.

In the fifties, there was a continued realization of the problem of the shortage of trained manpower in the dairy field. On the national level, activities were undertaken aimed at increasing the number of students enrolled in Dairy Technology. In Ohio, The Education Committee of the Ohio Dairy Products Association studied plans for a state-wide program of promoting Dairy Technology and had as one of its goals more effective high school counseling and recruitment programs. Dairy Technology was discussed with high school counselors at dinner meetings sponsored by such organizations as the Columbus Milk Distributors Association, Dayton Dairy Foundation, and the Ohio Dairy Technology Societies. The Ohio Dairy Boosters' Association financed a slide-sequence entitled "Opportunities Unlimited" which depicted the advantages of careers in Industrial Dairying - which was developed under the direction of George J. Kienzle. Staff members of the Department spoke to groups of high school principals and guidance counselors organized by local dairy groups throughout the state and personal consultation between industry people and high school officials and students was an important recruitment tool. During this period, additional

organizations and individuals provided Dairy Technology Scholarships for high school graduates. The Central Ohio and Maumee Valley Dairy Technology Societies, Esmond Dairy Company, Sandusky, and Broughton's Farm Dairy, Inc., Marietta, established scholarship programs. The Dayton Milk Foundation, organized by such men as Winston Himes, Virgil Dreyer, and Walter Moler, established a $7,000 endowment, later increased to $10,000, in the Ohio State University Development Fund, with the income to be used for Dairy Technology Scholarships. By 1954, twelve entering freshmen were on scholarships awarded as follows: Cleveland Dairy Technology Society - two for $200 each; Stark County Milk Producers Association - one for $200; Columbus Milk Distributors Association - one for $300 and one for $200; Dayton Milk Foundation - two for $200 each; Central Ohio Dairy Technology Society - one for $200; Maumee Valley Dairy Technology Society - one for $200; Esmond Dairy Fund - one for $250; Broughton Dairy Fund - one for $250; and the R. B. Stoltz Fund - one for $200.

In the Spring of 1954, the Department sponsored the first Dairy Technology Career Day. This first event was attended by 109 high school students and 35 industry representatives. The Career Day was held annually until 1960 when it was temporarily discontinued due to the lack of sufficient attendance to justify its continuation. Interest in Career Day reached a peak in 1957 with over 200 students, counselors, parents and industry people in attendance.

In 1955, the S. L. Stauffer Memorial Dairy Technology Scholarship program was established by the Warren Sanitary Dairy, Warren, which has been continuous since that time. This provides one four-year scholarship each year for a graduate from high schools in Trumbull County (later Mahoning County was included) who elected to pursue the Dairy Technology curriculum at the University. Also, the Associated Milk Dealers of Cleveland established a new scholarship for the Cleveland area. In 1956, sustaining scholarship programs were adopted by Frank Wish, Hopewell Dairy, Bellefontaine, and Frank Edward, President, Telling-Belle Vernon Company, Cleveland. These scholarships paid $1,000 to the recipient over a four-year period and provided for summer employment for the recipient if desired. In 1958, Fairmont Foods provided a four-year $2,400 scholarship for the best qualified freshman student entering the Department and J. D. Anderson, then Vice President, United Dairy Company, Barnesville, offered a sustaining scholarship in Dairy Technology for high school students in Eastern Ohio. The Greater Cincinnati Milk and Ice Cream Dealers assigned its scholarship, for $450 per year, to the Department in 1959. In the late 50's the Roy M. Babcock Memorial Fund was established by the Babcock Dairy Company, Toledo. Also, the Lynn F. Jennings Memorial Fund was established as an endowment fund in the University's Development Fund in 1958 - as a result of gifts from friends in Mr. Jennings' memory. Webb C. Jennings, Wayne Babcock, and Henry W. Ingersoll shared in this development.

By the beginning of the school year in 1959, about 25 scholarships had been established for Dairy Technology students including both the one-year and the sustaining four-year type. Scholarships awarded for the 1959-60 year involved 20 freshmen students and four upperclassmen with a total financial outlay of $7,650.

In the sixties, personal contact between industry people and the secondary schools was a major goal. The "Career Day" of the Department was replaced with "Open House" each Saturday in April and May, 1961, to provide an opportunity for consultation with interested high school students, advisors, and parents. During this period, the Department also shared in the College of Agriculture Career Conferences held twice a year. The four Dairy Technology Societies inaugurated "Student Nights" in November, with programs designed especially for high school students and their guidance counselors. Some of the Societies have continued with these special nights to the present time. Career Day was reinstated in 1962 and yearly programs were held through 1968, when it was again discontinued due to the lack of attendance. At this time, the Department again promoted the Dairy Technology interest through the Career Conferences of the College of Agriculture and Home Economics.

In the sixties, the Dairy Technology Societies of Northeastern Ohio, Maumee Valley, and Central Ohio continued their active recruitment activities and provided scholarships to deserving students. Specific dedicated individuals throughout the state did an outstanding job in working with high school principals, and guidance counselors, and scholarships such as the Beatrice Scholarship, Beatrice Foods, Inc., New Bremen; Forbes Chocolate Scholarship, Forbes Chocolate Company, Cleveland; Sterling Milk Company Scholarship, Sterling Milk Company, Wauseon; Superior Dairy Scholarship, Superior Dairy, Inc., Canton; and a Columbus Kiwanians gift provided additional financial support for the education of qualified students.

THE RECRUITMENT PICTURE:

In the period of 1953 through 1968, 291 scholarships were awarded undergraduate students, with 138 of these being awarded in the eight-year period of 1953-1961, and 153 during the next eight-year period. However, only a portion of the students who received scholarship support at the time of entering the University completed the Dairy Technology program. Academic failure was the largest factor contributing to the loss of the freshmen scholarship holders. In some years, no more than 30% of the freshmen scholarship recipients remained eligible for scholarship support by the second year. Even with this weakness, the scholarships program was responsible for directing and launching many talented young men into the Dairy Technology academic program and into successful careers in the Dairy Food Industry.

In the late fifties and into the sixties, the student enrollment in Dairy Technology continued downward, and there were less qualified applicants for the available Dairy Technology Scholarships. There was some indication that the interest of many industry people and dairy organizations in recruitment had waned and efforts to restore the recruitment program to the level of success achieved in the mid 1950's were only partially successful.

SPECIAL RECRUITMENT PROGRAMS:

In 1966, in an attempt to generate renewed enthusiasm in recruitment among the individuals and groups of Ohio, the Department proposed an "adoption program" designed to encourage individuals and dairy organizations in Ohio to "adopt" a high school, a branch college, or a student - and to be

responsible for direct, personal relationships aimed at attracting the best talent to our Industry. Attendance at Career Day and the number of applicants for scholarships in 1967-1968 was the lowest in history - thus providing evidence that the program did not achieve its purpose.

In further action aimed at the revitalization of recruitment enthusiasm, the Department launched the Career Communication Program (CCP) in 1968-1969. As in previous ventures of this nature, its success was dependent upon support and action of individuals and dairy organizations in Ohio at the local level. There was evidence of some revival of enthusiasm - due to the personal interest and dedication of relatively few persons. The large mass of the Dairy Food Industry remained largely non-responsive.

THE CHANGING SCENE:

The declining interest, enthusiasm, and participation in career information and recruitment programs by a larger share of the dairy industry - during the late 50's and the 60's - was due to a variety of factors. Among these factors were the changes taking place within the Industry and within the educational institutions. Consolidations and mergers within the Industry created few but larger dairy operations and management problems became more complex. Management was either unwilling or unable to devote an adequate amount of time to the recruitment of prospective students even though the changes taking place increased the need for technically-prepared college personnel.

Due to the short supply of graduates, competition among the dairy and non-dairy food companies for the College graduate was unusually keen. Salary levels and opportunities for advancement for the young Dairy and Food Technologists were the best in history. Only a few of the larger companies had their personnel wants satisfied.

Another aspect of the problem from the national standpoint was the restructuring of the Colleges and Universities in respect to the departments concerned with science, technology, and engineering as related to milk and milk products. Throughout the country, due to low student enrollment, a marked trend was to combine the dairy section into a complex with other food segments or to otherwise obscure or obliterate "dairy" as an identification of a specific commodity-oriented, professional, academic program. Essentially, in the late 60's, the Department of Dairy Technology at The Ohio State University remained as the only major Department bearing a name clearly specifying its relationship to the Dairy Food Industry. During this transition period, there was increasing feeling in Ohio among many of the representatives of the commercial industry who were assisting in the recruitment activities that the name "Dairy Technology" was not appropriate for the type of academic program being provided and did not lend itself adequately to effective "image" creation among the better high school students. This feeling which permeated the industrial ranks may have had some bearing on the lack of general enthusiasm and participation in the "Adoption" and "Career Communication" programs instigated in the latter years - along with the increasingly heavier professional demands on the individual's time.

THE FUTURE?

As the new decade begins, the Department is convinced that the opportunities for the college-prepared Dairy and Food Technologists were never brighter - and that the dairy and dairy-related food industries, institutions, and government agencies will have an ever-increasing need for such persons. Therefore, the job of attracting the best talented youth to the dairy industry should remain as a task of highest priority by all concerned.

GRADUATE EDUCATION

AND

RESEARCH

"The seeking after knowledge
Is an inherent characteristic
Of those dissatisfied with status quo."

THE GRADUATE SITUATION:

Graduate education has been a part of the Dairy Technology program since 1911 when the OSU Graduate School was organized. For 40 years the Department was qualified to offer only the Master of Science (M.S.) degree, but in 1953 the Department received permission to offer the Doctor of Philosophy (Ph.D.) degree as well.

The following shows the number of advanced degrees received by Dairy Technology students since 1919, the year the first degree was granted:

Years	M.S. Degree	Ph.D. Degree
1919-28	10	--
1929-38	21	--
1939-48	27	--
1949-58	30	9
1959-68	23	17
Total	111	26

Graduate student enrollment in Dairy Technology has fluctuated over the years. The following tabulation of the enrollment shows an estimated average two-fold increase in the number of graduate students per decade since 1939. For the past 2-3 years, the enrollment in graduate study in Dairy Technology has been at an all time high.

No. of Graduate Students

Years	Range/Year	Ave/Year
1939-48	1-7	4
1949-58	3-11	7
1959-68	8-22	13

The post World War II years have seen a change in the origin of the graduate student. Prior to 1941 and in the year immediately following the War, American students were in the majority, with only an occasional graduate student coming from another country. However, since the early 1950's, graduate students from other lands have increased in numbers, and since 1962, foreign students have constituted as much as 80 percent of the graduate student enrollment. Some of the countries represented by these students have been Australia, Brazil, Canada, Chile, Egypt, Greece, India, Ireland, Japan and National China.

Since 1949, the graduate study program in Dairy Technology has been defined, revised and upgraded with regularity to conform with University requirements, changing industry demands and student needs. At the present, the Department is offering four options in the M.S. degree program (a) Dairy Food Operations, (b) Business, (c) Engineering, and (d) Science, and two options in the Ph.D. degree program (a) Science and (b) Engineering.

The strengthening of the graduate education program has been made possible by increasing the number of graduate faculty and the requirements for in-depth education and specialization of the faculty members. Of the seven faculty members presently engaged in graduate education, only one has received his advanced degrees from OSU, and all have received their B.S. degrees from other institutions. This change in staff background has contributed greatly to the broadened horizons of the graduate program in the modern era of the Department.

RESEARCH PROGRAM:

A large and varied research program in Dairy Technology has been developed over the past 20 years. The expanded research activities have been made possible by five factors (a) increased emphasis on graduate education, (b) permission to grant the Ph.D. degree in 1952, (c) the affiliation of the Department with the Ohio Agricultural Research and Development Center in 1954, (d) financial support from federal and industrial sources, and (e) increase in research staff.

Prior to 1949, the Department's function was primarily instructional, and the research activities were confined to the solving of a limited number of technical problems, largely of an applied nature. Financial support for research was obtained principally by income from the University Dairy Plant, the dairy products audit programs, and, after 1942, from the Ohio Dairy Products Research Fund.

Since 1949, the Department has continued to give major attention to both basic and applied research. With the increase in depth and scope of the research activities and the addition of more scientists to the staff, the research program has been divided into five major areas (a) flavor chemistry, (b) protein and component interactions, (c) microbiology and fermentations, (d) product improvement and development as related to dairy and dairy-type foods, and (e) bioengineering and engineering processing. This research structure has permitted the investigation of all traditional dairy foods, plus an exploration into modified and imitation products.

Within the 20-year period from 1949-68 the research areas to which the Department has given attention reflect the changing needs and problems of the Dairy Foods Industry. Flavor, and the factors which affect the flavor of milk and dairy foods have been the object of continuous research since 1949. As new milk production and handling methods, and new processing and manufacturing methods were developed, different problems were created which affected flavor. For fluid products, specific attention was given to the lipase system, xanthine oxidase, phosphatase, and in the 60's to psychrophilic bacteria and high-heat effects on sulfur-containing components.

Research in the Protein area during the 50's and early 60's was directed towards heat effects, isolation and identification of protein components, and protein-protein and protein-salt interactions. In 1965, the Department initiated an extensive program on milk and non-milk protein interactions with other milk and food components to study the possibility of increasing the utilization of proteins for foods which would meet the world needs for high protein foods.

Research in Microbiology from 1950-60 was centered on antibiotics and their effect on bacteria and enzymes, a problem which was of major concern to the dairy industry during that decade. From 1959, with the advent of high temperature milk processing techniques, the emphasis in microbial research was placed on sporeforming microorganisms. Additional microbiological studies which were performed in the 60's included the metabolic activities of lactic acid cultures, and identification of the bacteria which constitute the flora of the modern milk supply.

Products research in the early 50's involved the properties of milk powders and evaporated milk. Since 1950, the Department has had a continuous program on cheese research, from 1950-58 on Italian varieties, and since 1956 on Cheddar and Swiss. The cheese research was directed primarily toward acceleration and positive control of flavor development, and, in 1967, the research was climaxed by the development of a method by which cheese curd can be ripened to a full-flavored product in five to seven days. Methods of improving the spreadability of butter were investigated from 1957-60. During the period 1959-66 ice cream flavor quality received attention, particularly as it related to vanilla, vanilla-type, and chocolate flavorings, and to the use of corn sweeteners. Cultured products were integrated in the research program starting in 1960. Studies in this area included the factors which affect the characteristics of Cottage cheese, buttermilk, and sour cream. In 1966, the Department cooperated on a pesticide study relative to the interactions of such materials with milk components. Periodically, the Department conducted management-related research, such as milk sampling practices (1951), fat losses in dairy plants (1956), and ice cream distribution practices and costs (1957).

In Engineering research the Department was a leader in the development of cleaning-in-place methods and systems in the early 50's. Also, during this period, equipment for continuous curd formation was developed which served as the prototype for subsequent developments in this area by other investigators. In the late 50's engineering research emphasis was placed on heat exchange, hydronlics and the rheology of fluid dairy products as these were related to food equipment design and utilization.

Research Budget: From a modest beginning of $7000 in 1949, the Department's research budget increased gradually year by year, largely as the result of grants from non-university sources. The increase in the importance of the Department's research program since 1949 is reflected in the approximate research expenditures for the four five-year periods through 1968 which were 1949-53 $121,000, 1954-58 $263.000, 1959-63 $494,000 and 1964-68 $543,000. Research support for 1968 was approximately $129,500 and the projection for 1969 is $177,500.

Financial research support has been from many sources, such as (a) federal, industrial, and association grants, (b) Ohio Agricultural Research and Development Center, (c) Ohio State University Development Fund and the University Research Council. Over the years 75-80% of the finances for research have been derived from grants and contracts with associations, agencies, and commercial organizations. For example, in 1969 one grant was from an Association, four from federal agencies, and five from industrial companies. This non-University support has made possible the development of the expanded research and graduate program which now exists.

The Ohio Dairy Products Research Fund was established in 1942 as the first of its kind in the world. Ohio Dairy Industry leaders had the foresight to anticipate the future need for enduring funds for research. A committee was appointed with the Ohio Dairy Products Association (ODPA) by Chairman O. S. Barkey to solicit industry support for the Fund, the income from which would be "used to foster a continuous research program in fields vital to the Dairy Industry". The members of this committee were H. F. Meyer, Cleveland, Chairman; C. W. Warnock, Bucyrus; T. Kline Hamilton, Columbus; and Russell Fifer, Ohio Dairy Products Association. The committee was expanded in 1943 to include N. R. Baker, Columbus; C. B. Alexander, Akron; F. N. Kinskey, Columbus; W. F. Funke, Cincinnati; F. M. Campbell, Salem; Lynn Jennings, Cleveland; Wayne Babcock, Toledo; Sam Isaly, Youngstown; and Henry Page, Toledo.

The goal of the committee was an Endowment Fund of $100,000, the interest from which would be used for research. The goal was reached in 1946 after some 200 companies and individuals had contributed $101,775. Contributions have continued over the years and in 1969, the Fund approximated $147,000 yielding an annual income for research of about $8,800.

The Fund is administered through The Ohio State University Development Fund by a Governing Committee consisting of the Chairman of the Department of Dairy Technology, the Deans of the Graduate School and of the College of Agriculture, three industry representatives appointed by the Board of Directors of ODPA, Directors of the OSU Research Foundation and The OSU Development Fund.

The members of the first Governing Committee was Chairman R. B. Stoltz, Dean Alpheus Smith, and Dean J. F. Cunningham from the University, and H. F. Meyer, Cleveland; P. E. Bacon, London and J. P. Pentz, Columbus, representing the Dairy Industry, with Russell Fifer, ODPA, and O. L. Thomas, OSU Development Fund serving ex-officio. H. F. Meyer served on the Governing Committee until 1963. Other industry representatives who have served on the Governing Committee include N. R. Baker, Columbus; William J. Bichsel, New Philadelphia; C. L. Broughton, Marietta; John Burns, Columbus; Herbert Ellis, Dayton; J. H. Erb, Columbus; Allen French, Cincinnati; G. M. Huheey, Cincinnati; R. N. Kennedy, Columbus; A. T. Mussett, New Bremen; M. O. Ross, Columbus; H. G. Sewell, Akron; and L. R. Stauffer, Warren.

The Everett Antrim Fund was founded in 1946 with a $5,000 gift from Everett Antrim, Bristol, Virginia, with the income from the fund to be used on approval of the Governing Committee of the Ohio Dairy Products (ODP) Research Fund. In 1955, the Fund was augmented with another $5,000 gift from Everett Antrim, who suggested and the Governing Committee approved, that the principal of this fund be transferred to the Ohio Dairy Products Research Fund.

The Emma H. Meyer Dairy Technology Endowment Fund of $10,000 was established in 1963 by a gift from Emma H. Meyer, Cleveland, the sister of H. F. Meyer, one of the pioneers responsible for the Ohio Dairy Products Research Fund and for years a member of its Governing Committee. The interest of this fund was designated to be used for research, graduate and undergraduate scholarships, and for related purposes. This fund has been used to provide additional support for the research and graduate program.

The L. H. Burgwald Memorial Fund, the newest Endowment Fund, was established in 1968 in memory of Professor L. H. Burgwald, a member of Dairy Technology staff from 1929-54. The Fund was started at the wish of Professor Burgwald's former students, the dairy leaders of Ohio, and his professional colleagues as an expression of love, respect and admiration of all who were privileged to have known him. The income from the Fund will supplement the income from the Ohio Dairy Products Research and the Emma H. Meyer Funds for research on new and improved dairy foods. As of May 1, 1969, there had been 109 donations totalling $5,420. One may anticipate this fund will continue to grow in the years ahead.

OTHER FUND SOURCES:

A 5-year grant given to the Department in 1949 by the U. S. Department of Agriculture through the Ohio Agricultural Research and Development Center (OARDC) to study factors affecting Italian cheese quality, was the first major continuing outside support for research. During the period 1949 through 1969, the Department received a total of 48 Grants for research, the majority of which ranged in duration from one to five years.

The U. S. Department of Agriculture, through the Ohio Agricultural Research and Development Center, has supported eight research projects, three on limited grants, and five on a multi-year basis. Other federal research support, in the form of seven grants, was received through the U. S. Public Health Service National Center for Urban and Industrial Health (Formerly the National Institute of Health), The Ohio State University, through the Development Fund, contributed 11 research grants, and industrial and private organizations provided 22 grants. Within the latter group, special recognition should be given to the American Dairy Association which, since 1956, has provided continuous support to the Department through five grants for cheese and frozen desserts research.

The Department's research staff increased from none prior to 1949 to five full-time equivalent members in 1969. At the present, all of the full-time employed research staff hold dual appointments with OARDC and the University.

Since 1949, publications resulting from research in the Department of Dairy Technology have numbered 79 Theses and Dissertations, over 160 scientific and technical articles, and 110 abstracts of formal presentations of research findings. In addition, the Department has published on a regular basis, since 1955, the "Research in Review," which is a compilation of the Department's research activities and findings, the sources of funds, the research staff, and the publications within the period covered by each volume. Volume VII of "Research in Review" was published in 1968 in conjunction with the hosting by The Ohio State University of the annual meeting of the American Dairy Science Association.

MEYER-ANTRIM LECTURE:

The Meyer-Antrim Lecture was established in 1963 in honor of H. F. Meyer and Everett Antrim, two Ohio dairy industry leaders, who through their unusual interest contributed much to the development of the Department's research and graduate program. The world-wide recognized dairy scientists who have appeared as Meyer-Antrim Lecturers include Dr. Niklaus King, Australia, Dr. E. O. Herreid, University of Illinois, Dr. Stuart Patton, University of Pennsylvania, Dr. T. A. J. Payens, the Netherlands, Dr. D. B. Emmons, Canada and Dr. Jack J. Stadhouders, the Netherlands. Credit is due the Graduate School of the University for providing financial support for this program.

SPECIAL REPORT:

In 1952, the Ohio Dairy Products Association financed, at a cost of approximately $3500, a special, 20-page booklet entitled "10 years of Dairy Products Research". This printed, effectively illustrated publication was designed to summarize the research activities of the Department for the first ten years following the establishment of the Ohio Dairy Products Research Fund. No previous public, formal report on the use of this fund had been made. Since 1952, the sebsequent periodical publication of the "Research in Review", (referred to earlier in this section) has provided the alumni and friends of the Department with continuous reporting on the total research program, and of significant contribution to this program of the Ohio Dairy Products Research Fund.

EXTENSION SERVICE

COMMUNICATION PROGRAMS

DEPARTMENT RELATIONSHIPS

EXTENSION SPECIALISTS AND THEIR JOBS

"When a job is successful
Let us be certain to
Acknowledge those
Who made it possible."

The first Extension Specialist in the Department of Dairy Technology was D. S. Kochheiser who joined the staff in 1929. During Mr. Kochheiser's tenure, the Milk and Butter Audit programs of the Department were organized, short courses in milk testing and butter manufacture were conducted, and the Specialist worked extensively with producers to improve the quality of milk and cream and with dairy companies in respect to milk processing, distribution, and the manufacturing of butter, ice cream, and cheese. Mr. Kochheiser served as Extension Specialist in Dairy Technology until April 1, 1933, when the position was abolished due to a reduction in appropriations for the biennium 1933-34 by the State Legislature. Beginning in 1933, the duties of the Extension Specialist were assumed, in part, by the resident teaching staff and the position of Extension Specialist was not restored for almost 12 years.

During the 1940's, five individuals served as Extension Specialist for varying periods of time. The first of these was W. L. Slatter who was transferred from the teaching staff of the Department to the Extension Service for about a year and a half beginning in October, 1942. During this period, the Ohio Cream Improvement Program was initiated and the Extension Specialist cooperated with the Ohio Dairy Products Association, mostly in southeastern Ohio, giving special attention to improving the quality of cream for butter.

Richard A. Larson was appointed Instructor in Dairy Technology Extension July 1, 1944 and served in this capacity until December 31, 1946. He was replaced by Thomas D. Harman who served during 1947. During 1947, a major objective of Dairy Technology Extension was to improve the quality of milk and cream produced by Ohio dairymen. Since the Butter Industry in Ohio was meeting increasing competition from butter of good quality from other areas a concerted effort was made by all agencies and organizations concerned to improve the quality of cream for butter making. Funds to employ another Extension Specialist in Dairy Technology, to give specific attention to the quality cream program, were made available through the Ohio Dairy Products Association and Frederick J. Greiner was employed April 1, 1947. Perry R. Ellsworth was appointed October 1, 1947 to replace T. D. Harman.

In 1947, the three Dairy Technology Extension Specialists, Harman, Greiner and Ellsworth, held 97 cream producer meetings with 13,415 in attendance; 30 milk producer meetings with 5,039 in attendance; 12 meetings for plant personnel with 246 in attendance; nine meetings with producers of manufactured grade milk for Swiss cheese making involving 1,297 individuals; conducted 10 Extension planning meetings involving 123 county agents; conducted 12 vocational agriculture, 4-H and Veteran's classes involving 310 people; participated in 15 Dairy Technology Society programs with 1,582

in attendance; organized and arranged three Dairy Day Technology Conferences and 29 other meetings involving 2,714 people; and conducted four Fieldmen and hauler meetings with 112 people in attendance. In 1948, the Ohio Milk Improvement Program was initiated by Extension Specialist Greiner.

F. J. Greiner resigned February 28, 1950 and was replaced by James T. Smith, April 1, 1950, who assumed the responsibility for the Ohio Cream Quality Improvement Program. During his tenure, J. T. Smith was active in assisting to establish the time-delivery system for cream in Ohio as a means for improving its quality. On January 1, 1953, he was transferred to Manager of the Department's Dairy Plant and was followed by Ronald B. Douglas who served as one of the Extension Specialists in the Department until September, 1953. Ronald Douglas was involved in all phases of the Department's Extension program working mainly in the southern counties while P. R. Ellsworth devoted his main attention to the northern half of the state. During 1952, the Extension program was greatly expanded with clinics, short courses, and the preparation and distribution of printed releases to achieve the goals of the program. This was made possible, in part, by financial support from the Ohio Dairy Products Association.

P. R. Ellsworth left the Department in June, 1954, and Frank Koval was the Extension Specialist from September, 1954, through March, 1959. During this period, educational programs designed to improve the quality of milk and milk products in Ohio was of high priority. The Extension Specialist participated in numerous meetings with producers to discuss technical problems of producing and handling milk on the farm; prepared and distributed materials on milk quality to fieldmen, sanitarians, county agents and vocational agriculture teachers; held leadership training meetings for fieldmen, sanitarians, and other persons who worked with milk producers; prepared and presented numerous radio and television programs designed for producers and consumers; supervised the dairy product audit programs; assisted with the annual Dairy Technology Conference, Sanitarians Short Course, and two-week market milk and ice cream short course programs of the Department; performed in the capacity of Chairman of the Ohio Cream Improvement Program; and assisted with dairy product clinics throughout the state.

Frank Koval was succeeded by Max E. Gregory, who was the Extension Specialist from May, 1959, through December, 1961. During the period 1959-1961, many of the Departmental releases, Timely Tips, Efficiency Tips, Research Digest, were initiated. The majority of the programs which existed during the 1950's have continued to the present time. The Ohio Quality Cream Production program was terminated in 1959, however.

During the decade of the 60's, the Department has four different Extension Specialists, Dick H. Kleyn (June, 1962 - July, 1963), James H. Martin (August, 1963 - August, 1965), Glen E. Huskey (August, 1966 - May, 1967), and John B. Lindamood (September, 1967, to present). In addition, two resident faculty members (W. L. Slatter and T. Kristoffersen) have served jointly on Extension appointments and have contributed significantly to the program. In the 1960's, the Extension personnel assisted

in conducting many of the traditional programs of the Department: the Dairy Industry Conference, the Mid-West Workshop in Sanitary Science, and the Dairy product audit programs. During this period, special attention was given to the farm bulk tank milk collection system as many of the markets changed entirely to this method. In addition, herd health problems and their relationship to milk quality became of paramount importance. Programs of the late 50's and the 60's were directed to all segments of the Dairy Food Industry. Strong relationships were continued with the four Dairy Technology Societies of Ohio.

In the later years, the Extension Specialist assumed a greater role as a resource person for dairy organizations and individuals, providing information and assistance in the solving of vexing problems. Trends in the Industry to larger organizations such as producer cooperatives and dairy companies, the highly automated operations and the rapid technological advancements have combined to create a need for more direct assistance by Extension personnel in the solving of important management and technical problems. Consequently, the personalized rather than the group approach has become a major Extension responsibility in Dairy Technology.

(See other sections for more information on Extension and service programs.)

COMMUNICATION PROGRAMS

"A well chosen word
At the right place and time
Can achieve understanding
And command action."

Over the past two decades, an important phase of the Extension and service functions of the Department has been the Communication Program. This program was designed to provide timely information of both a technical and non-technical nature by a mass media approach - thus utilizing the limited Extension personnel of the Department most effectively. To achieve the maximum educational effect with the minimum of personal time. The Communications Program has utilized public means of information dissemination, such as radio, television, newspapers and the wide distribution of written material prepared for specific purposes.

The Beginning: The main thrust to utilize the mass media approach to education occurred in the late 40's and in the 50's. The year 1956 serves as an example. In this year, material for twelve radio interviews was prepared and presented by Extension personnel. One tape was aired monthly by an average of seven stations throughout the State, and approximately 70,000 people were reached by radio each month. The specialist participated in a television show and assisted specialists in Home Economics in planning their shows which involved dairy products. Discussions were geared to the interests of milk producers and consumers primarily. News items were prepared and released to more than 300 daily and weekly newspapers, several radio stations and wire services and 50 periodicals.

Mission-oriented publications: As one aspect of the Communication Program, Extension personnel prepared bulletins, and other printed materials. In 1952, Extension Specialist J. T. Smith prepared a cream quality bulletin, "Production and Care of Cream for Making Butter" and 12,000 copies were requested by the Industry for distribution to producers. Leaflets titled "Fat Losses in Dairy Plants" and "Consider the Milk Can", were prepared by P. R. Ellsworth in 1953 and 1954, respectively. In 1956, Extension Specialist Frank Koval prepared two milk quality leaflets titled, "Bacteria and Milk Quality" and "Laboratory Pasteurized Counts in Milk" and approximately 8,000 copies were distributed. In 1958, two printed leaflets titled "Protect Milk from Residues" and "A Look at Bacteria in Milk" were developed to assist milk producers.

In 1961, two publications were prepared: a leaflet "Controlling Farm Milk Flavors Pays" by Extension Specialist F. Koval, and a bulletin "Producing Milk for Manufacturing in Ohio" by Extension Specialist Gregory, D. E. Zehr, Extension Economist, and C. D. McGrew, Dairy Science Extension Specialist.

During the 1950's, the Extension Staff introduced and distributed one page leaflets referred to as "Dairy Field Digests" or "Scoops" which were sent to dairy plants, dairy plant fieldmen, public health sanitarians, county agents and vocational agriculture teachers. These releases

contained information largely related to the production of milk on the farm and covered such subjects as fat variations in milk, cooling milk on farms, care of milking machine rubber parts, and fly control.

The Dairyologist: The Dairyologist had its beginning in March, 1949. This was an innovation of Department Chairman Gould - and Extension Specialist Fred Greiner edited the first four issues. The Dairyologist was conceived as a quarterly news piece to keep the Alumni and the Dairy Food Industry acquainted with current developments and future plans of the Department. The Dairyologist has been published quarterly since its introduction.

The Current Situation: In the period 1959-1961, the written communication program of the Department was redesigned with the intent of providing a series of timely, one-page leaflets, especially tailored to meet the needs of the various segments of the Industry and persons having different levels of responsibility. This plan resulted in the initiation of the following: Efficiency Tips, Timely Tips, Research Digest and The Epistles. In many instances there were to be prepared by the resident faculty and distributed through the Extension Specialist. The Dairyologist was to be continued as a part of the total program.

Efficiency Tips was directed to improved efficiency in dairy plants with particular emphasis given to pan-power and equipment utilization. The information was directed to middle management, plant supervisors, and superintendents and included such topics as Production Scheduling, Standard Times, Man-Power Efficiency, Functional Efficiency and Man-Minute Requirements. Timely Tips were planned to deal with timely technical problems related to milk and product quality, processing and manufacturing methods, and engineering. The Research Digest basically was to contain a condensed, interpretative, non-technical language treatment of recent scientific publications which had industrial significance. The Epistles was conceived and prepared by Department Chairman Gould for middle- and top-level management. These are essentially editorials dealing with the major management and Department problems largely from a philosophical viewpoint - and 36 issues have appeared periodically since the introduction of the Epistles in 1959.

Since 1959, approximately 260 of the different releases have been prepared and the number distributed approximates 400,000. A number of the releases have been ordered in quantity by diary plants, health departments, and producer cooperatives and widely distributed to producers and other groups. For example, in 1967, 10,000 copies of a leaflet "Cleaning Milk Handling Equipment", was distributed. Over the years, several of the releases have been reproduced in farm journals and dairy tread periodicals.

"Our relationships with others
Determine our own success."

Throughout its history, the Department has cooperated with many individuals, companies, organizations and agencies in furthering its educational and service goals. The value of many of these relationships are revealed in other sections of this document. (See Section on Extension Specialists) The information presented in this section pertains to various activities which do not fit logically into the other categories and which have involved substantial relationships with other groups.

THE OHIO CREAM QUALITY IMPROVEMENT PROGRAM:

In 1942, the Department became a participant in a Cream Quality Improvement Program in cooperation with the Ohio Butter Manufacturers Association (a branch of the Ohio Dairy Products Association) and the Ohio Department of Agriculture. In 1946, activity was increased by (a) greater emphasis on cream producer meetings, (b) urging more widespread use of the sediment test and (c) promotion of 4-H and FFA demonstration teams. The Ohio Dairy Products Association allocated $1000 to be used for 4-H and FFA team demonstrations concerned with milk or cream quality.

To achieve the objectives of the program, the Extension Specialist of the Department, assisted by County Agents, Ohio State Department of Agriculture personnel and members of the Butter Industry, was active in arranging for and holding producer meetings, preparing monthly cream grading reports, making plant and cream station visits, and preparing publicity and attending to many other details of the program. Direction for the program was provided by a Cream Quality Steering Committee of the Ohio Dairy Products Association which held monthly meetings on the University Campus. In the late 1940's and into the 50's, the Ohio Butter Manufacturers Association financed the support of an additional Extension Specialist in Dairy Technology. The Extension Specialist became Program Chairman for the Ohio Cream Improvement program.

In 1950, a major objective of the Cream Improvement Program was the adoption of a time-delivery system for cream for the entire State. This involved the assembly and interpretation of information submitted by the companies participating in the program. The information was compiled in a summary, and a copy was sent to each company in the program. In 1956 and 1957, 18 and 17 companies participated, respectively.

With the demise of farm-separated cream and the decline in the number of butter plants in the State, the Ohio Cream Quality Improvement program, as such, was discontinued in 1958. The Department continued to work with producers and manufacturers to insure the quality of Ohio Butter, but the major emphasis of the Department's programs was directed to other areas of major importance. (See Section on Extension Specialists for more details)

QUALITY MILK PROGRAMS:

Throughout the history of the Department, one of the paramount objectives of the Extension program has been the improvement of the quality of the raw milk supply. Various educational approaches have been used involving producers, fieldmen, regulatory agencies and other relevant groups and organizations. One such endeavor was the Ohio Milk Improvement program, launched by the Department in January, 1948, in Central Ohio, and designed to acquaint producers with the elements of quality milk production. A series of three producer meetings in Franklin County - with an attendance of over 550 people - initiated the program. Other meetings were held during the year in Licking, Pickaway, Fairfield, Madison, Union and Delaware Counties.

In 1951, a system of Milk Quality Awards was introduced by the Department in cooperation with County Dairy Service Units, the Ohio Dairy Products Association and local health departments. The plan was designed to give recognition to milk producers who did an unusually good job of quality milk production over a 12-month period. Each distributor in a given county was asked to nominate three of his producers yearly to receive an award. The plants compiled a plant score of each producer, based on his milk quality record for the year, and a committee for the County Dairy Service Unit visited the farms of the nominees and determined the farm score. Certificates were awarded to the producers receiving the highest total scores at the annual meetings of the County Dairy Service Units. Fifty certificates were awarded in 1956. During 1957, sixty-two producers in four counties were presented milk quality awards. Thereafter, the program began to lose its effectiveness and was terminated in 1965.

During the 1950's and 1960's the Extension Specialist in Dairy Technology worked directly with milk producers in two types of educational programs, county producer meetings and dairy farm tours.

The county producer meetings were arranged by county agents and the Specialist cooperated with the Departments of Agricultural Engineering, Agricultural Economics, and Dairy Science in developing the programs. Subject matter presented by the Dairy Technology Extension Specialist dealt with such topics as milk quality, milk production practices, cleaning and sanitizing and fat variations in milk.

The dairy farm tours were arranged by the county agents assisted by the specialists in the various departments involved. Yearly, 200 to 400 producers were reached as a result of the tours.

During the 1950's an out-of-state- series of one-night meetings was conducted by the Dairy Extension Specialists in Principles of Milk Sanitation. These were scheduled in such cities as Youngstown and Athens in cooperation with the local health departments. The subject matter included the fundamentals of bacteriology and cleaning and sanitizing methods and were designed for dairy plant employees, fieldmen and sanitarians. (See other Sections for more information on Milk Quality Programs).

Youth Activities and Milk Quality: Youth activities have constituted a part of the quality milk program. Two formal activities of this nature were the FFA Milk Judging Contest and the Quality Milk Production Contest for FFA students.

The FFA Milk Judging Contest has been in existence for more than 20 years and is a part of the much larger annual spring FFA event held on the Campus under the sponsorship of the Department of Agricultural Education. The Department has cooperated over the years by assuming responsibility for the milk judging event. The contest involves 3-member FFA teams who judge and numerically score milk for flavor, milking machine heads for physical and sanitary conditions, and sediment pads obtained by filtration of a given quantity of milk. The number of teams competing in the milk scoring contest have ranged from 48 to 60 over the past decade. Prizes are awarded to the winning teams. The contest is designed to give the students a concept of the factors which determine milk quality.

The Quality Milk Production Contest was initiated by the Department in 1960 in cooperation with the Junior Fair Division of the Ohio State Fair. This event is held in conjunction with the annual Ohio State Fair and 3 member teams of FFA Chapters compete. The contest consists of the submittal to the Department of one container of milk from the home farm of each of the team members, and these samples are then subjected to flavor, composition, and bacterial analysis. Cash prizes are awarded to the team or teams providing the milk with the best rating, and certificates are presented to those individuals who submitted milk which best fulfilled the standards established for the contest. Twenty-eight FFA Chapters entered teams in the 1960 event. Since this date, the number of entries has varied from 17 to 25. The purpose of this contest is to give the competing students an insight into the production factors that influence the quality of the farm milk supply.

PROFICIENCY EXAMINATIONS:

For the past 28 years, the Department has been cooperating with the Ohio Department of Agriculture in the Weighers-Samplers-Testers Examinations which are required by law of all persons engaged in these activities as they apply to the purchase of producer's milk. This cooperative effort became possible through an Ohio law in 1941 which set forth the joint responsibilities of the Ohio Department of Agriculture and the Department in administering the law and in conducting appropriate examinations. In this relationship, the Department has been given the responsibility for conducting the examinations of all applicants and certifying the results to the Ohio Director of Agriculture or his disignee for the awarding of licenses.

During the 1940's and 1950's, the examination was given monthly, limiting the number of applicants to 40. In the later 40's, the number of applicants became so great that examinations were given bi-monthly. Applicants located north of Route 40 were scheduled for one of the bi-monthly examinations and those located south of Route 40 were scheduled for the other.

In the early 60's, with the advent of bulk handling of milk, milk haulers were required to obtain a license to measure and sample milk for fat analysis. A special examination was devised for this purpose in 1963.

As the 1960's progressed, changes in the Dairy Food Industry, especially the reduction in numbers of processing plants, decreased the number of licensed personnel needed and the examinations were given with less frequency. In the early 60's, examinations were given every-other-month and, beginning in 1968, they were given quarterly. In this later period, 30 to 40 applicants for the Bulk Tank Operator's License and from 5 to 10 applicants for the other licenses participated.

THE DEPARTMENT AND THE OHIO STATE FAIR:

Beginning in the 20's, certain faculty members of the Department had major responsibilities relative to the operation of the Dairy Building and/or the administration of the Dairy Products contests of the Ohio State Fair.

At some period prior to the organization of the Department in 1929, the Dairy Building on the Ohio State Fair Grounds was designed as a complete model dairy barn and processing unit which served as an educational exhibit during the State Fair. At this time, cows were milked, and the milk was tested, standardized, pasteurized and bottled in the building. At some point in time, possibly in the late 1920's the cows and milk operation were removed from the building, but the testing of milk and some steps in milk processing were continued for a number of years as an educational display.

Existing records indicate Department Chairman Robert B. Stoltz supervised the operation of the Dairy Building from 1929 until 1946, with the exception of 1932 when D. S. Kochheiser, Dairy Technology Extension Specialist, was Superintendent.

In 1929, an agreement was executed between Department Chairman Stoltz and Perry L. Green, Director, Ohio Department of Agriculture, which gave the former the responsibility of managing the Dairy Building during the Fair on a self-supporting basis. The agreement permitted dairy products to be sold, provided they met certain specifications for quality. No commercial firms' names were to be used in the building. The stipulations for dairy products to be sold were "that the ice cream must contain not less than 16% butterfat and 42% total solids and the milk must be served sweet, cold and must contain not less than 4% milkfat".

Those major attractions having a long history of association with the Fair were (a) the "butter cow (sculptured with butter), (b) Swiss cheese exhibits, (c) sale of Swiss cheese sandwiches, and (d) the Swiss cheese contest.

The butter sculpturing exhibit dates from 1914 and the "butter cow" exhibit still exists as a popular, traditional trademark of the Fair.

The relationship of the Swiss cheese industry with the Dairy Building has existed continuously since the 1920's and the Ohio Swiss Cheese Association paid the operational costs in 1938. The Department, through its faculty, has been associated with the Swiss cheese contest since its inception.

The Department Faculty members responsible for the operation of the Dairy Building during the late 1930's and the 1940's were R. B. Stoltz and W. L. Slatter, but the Department did not have official involvement in this relationship. Financial statements indicate that a committee supervised the operation of the building from 1946 through 1949.

During the period of 1930 and 1950, main features of the operation of the Dairy Building included the sale of Swiss cheese sandwiches, ice cream and milk during the Fair. The annual receipts from these sales increased greatly over these years. In the latter years, receipts were used to finance the operation of the building and the educational exhibits, including the butter sculpturing.

In 1950, by an agreement between the University and the State Department of Agriculture, the Department of Dairy Technology officially assumed the responsibility for the Dairy Building. W. L. Slatter was placed in charge of the State Fair Dairy Project. The operation was to be entirely self-supporting through the sales of dairy products during the Fair.

In 1950, the dairy products contests included butter, Swiss and Cheddar cheese. In 1952, the dairy products contest was enlarged to include the buttermakers proficiency event, and competitive scoring contests for individuals in milk, butter, ice cream and cheese were introduced. A Cottage cheese contest and clinic became a part of the program in 1954. Due to lack of interest and support, the cheese contest was discontinued in 1956, the butter workmanship events in 1958, and the competitive scoring contests in 1959.

In 1959, the Department terminated its official responsibility for the Dairy Products Building. The management was assumed by the American Dairy Association of Ohio, with Earl Poling, Business Manager of this Association, becoming the manager of the project. A Steering Committee was established for supervising the program, with the committee representing the producers, processors, the Ohio Swiss Cheese Association, and the University. The American Dairy Association contributed funds for initiating the project under the new management. The Department continued to be responsible for the product contests.

In addition to the Swiss cheese competition in 1960, there were also contests in ice cream and Cottage cheese. Twenty-one samples were entered in the ice cream competition and 29 samples in the Cottage cheese event. For the next four years, 34 to 50 ice cream samples and 27 to 32 Cottage cheese samples were entered yearly. The Cottage cheese and ice cream competition was discontinued after 1964 due to insufficient registration and the questionable educational value of the contests. The Swiss cheese contest has continually received excellent support from this segment of the Industry and is still in progress.

As the new decade begins, the Department is still intimately involved in the Dairy Project of the Ohio State Fair, with faculty representation on the Steering Committee and with responsibilities for certain educational exhibits and for the Swiss cheese contest. The Quality Milk Production Contest for FFA students (described in the section on Milk Quality) is also administered by the Department through the Junior Division of the Fair.

THE DEPARTMENT AND THE OHIO SWISS CHEESE INDUSTRY:

Early in the twentieth century, the Ohio Swiss Cheese Industry was finding it difficult to manufacture good quality cheese consistently. Economic returns were disappointing and the factory operators and farmers were becoming discouraged. At a meeting in Sugarcreek, Ohio in 1918, representatives of the University's Department of Dairying, and the U. S. Department of Agriculture recommended the use of bacterial cultures to improve the quality of the cheese and cooperative sales efforts to achieve greater market returns. As a result of this meeting, the Ohio Swiss Cheese Association was organized on November 16, 1918, with Professor R. B. Stoltz of the Department playing an important role. The first year only two companies joined the Association, The Sugarcreek Dairy Company at Sugarcreek and The Trail Cheese Company, Trail, Ohio. The Association continued to grow, however, and by 1940, 27 companies were members.

In 1921, the Department of Dairying reported that an Extension Specialist was working with two Swiss cheese plants on a project to demonstrate the advantages of using cultures and that a system of monthly sales, strict grading, and the use of "modern" cultures had enabled the two concerns to sell their cheese for 36 cents a pound compared to 23 cents for cheese from less progressive companies. The two cooperating companies were the Trail Cheese Company in Holmes County and the Number Seven Cheese Company in Tuscarawas County. One of the plants with which the Department was working shipped the first carload of graded Swiss cheese ever sent from Ohio to New York in September, 1921. The success of the demonstration prompted 14 other companies to request assistance.

On April 28, 1922, Professor Stoltz accompanied two specialists from the U. S. Department of Agriculture to the "Swiss Cheese" counties where they selected two more demonstration plants for the coming year: the Sugarcreek Dairy Company and the Shiffle Cooperative, both in Tuscarawas County. By 1931, there were 16 plants cooperating with the Extension Dairy Technologist in making cultured cheese; in 1932 there were 20, in 1933 there were 25 and in 1934 there were 31. Faculty members working with the Swiss Cheese Industry during this period were Department Chairman Stoltz, and Extension Specialist Kochheiser.

Initially, and until his death in 1949, R. B. Stoltz served as Secretary for the Ohio Swiss Cheese Association. Thereafter, W. L. Slatter assumed this post; later becoming the Department's official advisor to this group. In more recent years, T. Kristoffersen has been a participant in this relationship.

In 1964, the Department sponsored a special Swiss cheesemakers short course. (See section on Adult Education for more details.) Forty-three registrants from 19 Swiss cheese plants attended.

In 1964, in a further effort to serve the Ohio's Swiss cheese industry, the Department established a research project at the Ohio Agriculture Research and Development Center on "Factors Affecting the Marketability of Swiss Cheese". This project resulted in a detailed study of practices in the Swiss cheese factories of Ohio, a study which required full cooperation of the participating companies.

THE DEPARTMENT AND THE DAIRY TECHNOLOGY SOCIETIES:

A vital link of the Department with the commercial interests of Ohio has been the four dairy technology societies: the Central Ohio, the Cincinnati, the Northeastern Ohio (formerly the Cleveland Society), and the Maumee Valley (Toledo area).

Beginning in the 1930's, faculty members played a vital role in organizing these groups. The first two societies formed in Ohio were the Central Ohio Society in about 1935 and the Cleveland Society in November, 1937. No early records are available for the Central Society, but faculty members of the Department were instrumental in bringing about its formation. Professor Stoltz served as Chairman of the Cleveland Society's first meeting, attended by 56 persons. He initiated action to prepare the constitution and by-laws and served as Program Committee Chairman in the beginning years. Dues were established of 25 cents per meeting. At the second meeting, which occurred in January, 1938, the following officers were elected: President, R. J. Ramsey; Vice President, Robert E. Hamilton; Secretary, Donald A. Charles; Treasurer, Clarence M. Boyer. The Society changed its name to the Northeastern Dairy Technology Society in 1955.

The Maumee Valley Dairy Technology Society was formed in 1949 following a previous discussion meeting attended by 65 men. The first officers elected were: President, W. A. Hoyt, Ohio Cloverleaf Dairy; Vice President, Fred Anspach, Page Dairy Company; Secretary, Walter S. Tucker, Franklin Ice Cream Company; Treasurer, Harry Anderson, Babcock Dairy; and Sgt.-at-Arms, Henry C. Holtzhauer, Ohio Cloverleaf Dairy.

The Cincinnati Dairy Technology Society was organized in April, 1951, and the first officers were: President, N. Woebkenberg; Vice President, W. Weber; Corresponding Secretary, J. T. Smith; Recording Secretary, E. Henneksen; Treasurer, G. J. Coors and Sgt.-at-Arms, N. Ruether.

The general plan adopted by all of the Societies, which has prevailed since the 30's, was to have monthly dinner meetings, October through May. The programs consisted of guest speakers and/or product clinics. Of these meetings, the November meeting was, in later years, designated as "student" night by those societies participating in recruitment activities, the December meeting was traditionally a social

event, and the February meeting was held in conjunction with the Dairy Industry Conference banquet in Columbus - for which the Societies were co-sponsors.

Throughout the years, selected faculty members of the Department have worked closely with each of the Societies, serving as Secretaries or Corresponding Secretaries. In these capacities, the faculty members have assisted in program planning, arrangements, and execution, and provided the channels of communication between the Societies and the Department. The Department representatives have usually been the Extension Specialists.

Through their Educational Committees, the Societies have been active in career and recruitment activities, and some have provided scholarships for worthy students to follow the Dairy Technology Program at the University. They have frequently sponsored a special "student night" for the purpose of acquainting the high school principals, counselors and students with career opportunities in the Dairy Industry and have provided transportation to the Dairy Technology Career Day at the University. The Northeastern Ohio and the Central Ohio Societies were early participants in recruitment programs and scholarship support. Through the years, the Dairy Technology Societies have cooperated with the Department in planning and executing educational programs and dairy product clinics.

In the late 60's, due to changes in the structure of the Dairy Industry, with fewer and larger dairy plants and organizations and with the formation of competing groups in Ohio in "Food Technology", the problem of maintaining a large and viable membership became acute for some of the Societies. Consequently, a survey of the members of the Societies was initiated by the Department in 1969 to determine if changes in name, format, and type of meetings were desired. As the result of this, the Central Ohio organization adopted a new name "The Central Ohio Dairy Foods Associates" and took action to have less frequent meetings during the period of September-May, 1969-70. The other Societies made no changes as the result of the survey.

THE DEPARTMENT AND THE AMERICAN DAIRY SCIENCE ASSOCIATION:

The Department and its faculty have had years of close relationship with the American Dairy Science Association - undoubtedly the world's foremost organization for dairy scientists, educators, and technical leaders. This relationship has involved responsible leadership roles in the organization by certain faculty members, honors which have been bestowed upon faculty members by the Association for their contributions to research and to the Dairy Industry, scientific papers presented at the annual meetings of the Association by the faculty and their graduate students, and the serving as host to the annual meeting of the Association on the University Campus.

The Department has served as host or co-host for the Association's annual meeting on three occasions: 1938, 1944 and 1968. The total attendance was 620, 384 and 1701 for 1938, 1944 and 1968, respectively.

Professor and Department Chairman R. B. Stoltz has a powerful influence on the development of the Association during his term as Secretary-Treasurer for the period 1936 to 1948. Following Professor Stoltz's death

Perry R. Ellsworth, Extension Specialist, was elected to the Secretary-Treasurer's position for six years (1949-1954). He was followed in the position on a temporary basis by Thomas D. Harman, Assistant Professor of the Department, who served during 1955. I. A. Gould served the Association as an Associate Editor of The Journal of Dairy Science, as a Director for four years (1952-1954, 1957), as Vice President (1955) and as President (1956). His term as President coincided with the Golden Anniversary of the Association. During the 1950's and 1960's, various faculty members were leaders of technical sections of the annual meetings, and were significant contributors to the work of many major committees.

Faculty members who have received special honors from the Association are L. H. Burgwald - the Association's Distinguished Service Award for contributions to the Dairy Industry (1965); W. J. Harper - the Borden Award for chemical and microbiological research (1958); T. Kristoffersen - the Pfizer Paul-Lewis Award for cheese research (1965); W. L. Slatter - the Student Affiliate Award for Excellence for his work with the Student Branch, (1965); I. A. Gould - the Association's Award of Honor for service to the Association and to the Dairy Industry (1966).

As noted in the Student Section of the History, graduate students of the Department have received recognition for outstanding scientific paper presentations at the annual meetings of the Association.

For almost two decades, the faculty members and their graduate students have distinguished themselves by the large number and high quality of scientific papers presented at the Association's annual meeting. From eight to twelve such papers have been delivered yearly which have revealed the breadth and scope of the research underway in the Department.

DAIRY PRODUCTS AUDIT PROGRAMS

"Facts must be available
To reveal weaknesses and strengths
And before valid judgements may be made."

Early in the history of the Department, beginning in 1930, the Department introduced the audit program. This was designed to assist the dairy companies in the evaluation and quality control of milk and milk products. The audit consisted of an arrangement by which the companies participating in the audit would submit or have submitted to the Department samples of their products at specified times. These samples would then be subjected to complete chemical and microbiological analysis and for organoleptic evaluation and the results would be returned to the plants for their use. In some cases, recommendations for improvement would be made in the report of the Department.

During the period of 1930 to 1966, audit programs were conducted for milk, ice cream, butter, and cottage cheese. Initially, the service was free, but in later years a nominal fee was charged on an annual basis.

THE MILK AUDIT: The Milk Audit was started in 1930. In the beginning years, this consisted of monthly examination of commercial milk samples collected in Columbus from the plants by Extension Specialist D. S. Kochheiser, and in such cities as Toledo, Akron, Cleveland, Coshocton, Springfield, and Dayton by the local health officials. In 1932, there were 823 milk samples from 10 cities evaluated.

In 1933, the position of Extension Specialist was abolished due to a reduction in appropriation, but the Audit program was continued by the resident staff. In 1933, 480 samples of milk from plants located in 10 cities were collected and evaluated. In 1941, the phosphatase test was included in the analysis. Also, Audit samples could be entered in the Ohio State Fair competition. State Fair Awards were made on the basis of the average scores attained for six scorings for the year. Unfortunately, some companies used the State Fair results for advertising purposes which created unfavorable reaction from the other Audit participants.

In the 40's, the interest in the Audit remained high during the early years, but thereafter participation decreased. Many companies and local health departments were now obtaining sufficient quality information from their own laboratories. Furthermore, the cost of collecting and shipping the milk from various areas of the state became prohibitive. Consequently, in about 1951, the milk audit was discontinued.

THE BUTTER AUDIT:

In August, 1932, the Department began the Butter Audit as a free service to the large number of butter manufacturers of the State for the purpose of improving the quality of Ohio butter. At a later time, a fee was assessed for the analyses and the evaluations. From 1932 through 1935, twenty Audits were held with 977 samples from 100 plants being examined.

The Butter Audit continued through 1958. During the 1950's, the number of plants submitting samples in the Audit varied from 19-12. Due to the decline in the number of plants manufacturing butter in Ohio, the high cost of the Audit program, the development in Ohio of commercial testing laboratories, and the need of the Department to give major emphasis to other programs, the Audit was terminated in 1958.

THE ICE CREAM AUDIT:

The bi-monthly Ice Cream Audit was initiated in the 1930's. At the outset, this involved vanilla ice cream. As the years passed, a provision was made to include, periodically, chocolate, strawberry, and special flavored ice creams and sherbets. At its peak, approximately 50 ice cream manufacturing companies participated in the program, representing about 225 samples per year. During the early 60's, the number of participating companies decreased markedly, and it was obvious the Audit program was losing its educational value. Consequently, the Audit was discontinued in 1966. The same factors which caused the termination of the Butter Audit were involved in this decision. Also, the high cost of shipping the ice cream, and the difficulties encountered in obtaining the ice cream in good condition for evaluation were other major reasons for discontinuing this program.

COTTAGE CHEESE AUDIT:

Because of a desire to assist the Industry in improving the quality of Cottage Cheese in Ohio, the Department initiated an Audit program in January, 1965. In this program, participating companies were to submit containers of Cottage Cheese in alternate months. The results were returned to the plants with suggestions for improving the quality of the cheese. This Audit never received the full participation anticipated. At its peak, approximately 25 plants participated and submitted some 110 to 120 samples of cheese. Only a limited number of participating companies submitted samples regularly for a given year. The difficulty of shipping the cheese and of maintaining it in good condition during shipment discouraged participation. Consequently, the Cottage Cheese Audit was discontinued in December, 1966.

CONCLUSION:

Throughout the years, the Audit programs proved to be a valuable part of the Extension and service activities of the Department and were of significant help to the processors and manufacturers in the earlier years when the laboratory facilities of the companies were limited, when the local health departments did not conduct regular examinations of fluid milk and fluid milk products, and when independent commercial laboratories to conduct analysis were not readily available. In later years, all of these weaknesses had been overcome. Furthermore, the high cost to the Department of the Audit programs, the limited educational value of the programs in later years, and the necessity of utilizing the Department's manpower resources in other important programs became significant aspects underlying the decision to terminate the audit-type of activity. In a sense, it may be concluded that the Audit Program became a victim of changes and progress.

CONTINUING EDUCATION

SPECIAL ADULT EDUCATION PROGRAMS

(The Conference and Workshop are treated in other sections)

"A mind does not
Close itself to more learning,
It is the human
Who does this."

THE "WHY" FOR THE PROGRAMS:

Throughout the long history of the Department, a major objective has been that of providing the maximum of in-service type of educational programs for persons employed in all segments of the Dairy Processing and Manufacturing Industry in order to increase their knowledge and competence and to help them fulfill their responsibilities more effectively. These adult or continuing education activities have taken many shapes and forms - programs have been long and short - they have represented short courses, workshops and seminars - and they have been adjusted with the passing of time to satisfy the needs of the individuals and the changing patterns and policies of the operating companies. In the earlier times, the major need was for longer-time full-time short courses of two weeks or more in length, where the "how to do" was the dominant purpose. As the situation changed, the demand for the prolonged short courses decreased; those needing the training could not be spared by the companies for such an extended period and the subject matter requirement became more advanced and professionalized. Short-time refresher courses rather than the extended training courses came to represent the major thrust. Consequently, correspondence courses, night-time courses, the "one-day stands", and conferences and workshops became the preferred approach. In these adjustments and changes, the Department has only attempted to read the Industry's barometer - and to react accordingly. The most dominant "reading" is that of "registration" - since this, in effect, is a reflection of the industry's support for - and need of - a given type of program. In terms of the traditional short courses, the decisions made by the Department to continue or discontinue a program was almost always on the basis of registration: when registration became too low - it was deemed uneconomical and impractical to continue the program. In such cases, then the Department's effort was directed to exploring other pathways for providing the needed continuing educational programs in a more meaningful way.

EARLY PROGRAMS:

Among the first adult education programs of the Department of Dairy Technology after it was established in 1929 were short courses and faculty participation in the annual Farmers' Week Programs sponsored by the Ohio Cooperative Extension Service. The Farmers' Week Program held February 3-7, 1930, included nine presentations in the Dairy Technology area, "Milk Testing" - J. H. Erb; "Undulant Fever" - L. S. Eye, Ernest Scott, and L. L. Rummell; "Philadelphia Milk Quality Program" - C. I. Cohee; "Why Milk Tests Vary" - L. H. Burgwald; "Methods of Grading Milk and Bonuses Paid" - C. I. Cohee; "Cream Grading" - D. S. Kochheiser; "Why Cream Tests Vary" - R. B.

Stoltz; "The Economic Value of the Dairy Industry in Ohio Agriculture" - W. A. Wentworth; and "The Future of the Dairy Industry in Ohio" - F. L. Shoenberger. In 1931, one presentation was made during Farmers' Week, in 1932 eleven, and in 1933 six. In 1931, the Department offered three short courses. These were expanded to five short courses in 1933: January 2-13, Milk Testing; February 6-10, Market Milk; February 13-17, Butter Manufacture; February 20-24, Ice Cream Manufacture; and March 1-3, Cheese Manufacture. In 1934, the Dairy Industry Conference was initiated (see other section) and for the next two decades short courses were not offered on a regular basis.

MILK TESTERS' TRAINING:

In the late 1920's, the Department of Dairying offered a special two to three weeks course for men who wished to become testers for cow-testing associations. When satisfactorily completed the participants were eligible for positions as testers for the Dairy Herd Improvement Associations. The registration fee was approximately $40.

After the Department of Dairy Technology was established in 1929, two-week Short Courses in the testing of milk and milk products were offered annually for some years with a registration fee of $6. These courses continued with modification into the 1940's. During the 40's, the Department also offered a one-week short course for preparing individuals for the new Ohio Weighers-Samplers-Testers Examination.

During the 1950's and 60's, the Department cooperated with the Department of Dairy Science in the training of Dairy Herd Improvement Supervisors. The Dairy Technology Extension Specialist taught the testing portion of the two D.H.I.A. Short Courses held each year. From 20 to 40 supervisors were trained yearly.

NIGHT-TIME SHORT COURSES:

During the early 50's, night-time short courses were offered in Columbus. These were one-night-per-week sessions extending over a period of fifteen weeks. These were held for two years during the Winter Quarter and Spring Quarter. There was considerable interest in these by companies and individuals in Central Ohio. For example, for the first course in market milk in 1950, 37 employees representing 16 fluid milk plants in Central Ohio enrolled. In 1951, the night short courses were held for market milk and ice cream. Twenty-six persons completed the Market Milk Program and 16 the Ice Cream Program.

Students came from as far as 100 miles to participate in the Short Course programs. The subject matter was technically oriented and was designed to provide information for those having in-plant and sales functions and responsibilities. Declining registration resulted in a discontinuance of this program. Requests came from other markets for similar courses but the unavailability of a sufficiently large teaching staff precluded this possibility.

TWO-WEEK SHORT COURSES:

In the early 50's, two-week short courses in market milk and ice

cream were sponsored by the Department. From 1951 through 1956, market milk courses were held each November with L. H. Burgwald in charge. The registration fee for the short courses was $25.00. These were full time, eight hour per day, courses covering the processing, chemistry and bacteriology, quality control and flavor control of milk. Individuals representing sales, plant, engineering, management and office participated. In 1955, the subject matter content of the short course was broadened to include buttermilk and cottage cheese production, equipment maintenance and sanitation.

Participants in the Market Milk Short Courses were mainly from companies throughout the State; however, registrants came also from Kentucky, Missouri, Indiana, West Virginia, and Michigan. Attendance at the Short Courses was as follows: 1951 (13), 1952 (19), 1953 (21), 1954 (17), 1955 (20), 1956 (16).

During this same period, two-week short courses in ice cream were held in the months of January and/or February with T. D. Harman in charge. These were designed as complete practical courses on the principles of ice cream manufacture and involved the processing and freezing of ice cream, essentials of maintenance, product quality and laboratory control. In addition to the Ohio participants, registrants were from Colorado, Kentucky, New York, West Virginia, Iowa, Indiana, Pennsylvania, Michigan, and one individual was from Iceland. The Ice Cream Short Course registrations for the various years were: 1952 (20), 1953 (20), 1954 (15), 1955 (17), 1956 (17).

The two-week short courses were discontinued in 1957 due to insufficient registration. In 1962, a survey was made of the Industry to determine if there was a need for additional short courses of this type. The response indicated there was little interest in two-week short courses due, in part, to the inability of companies to free responsible individuals from their duties for the period of time required.

MANAGEMENT AND SUPERVISION:

In the early 1950's, the Department extended the scope of its educational endeavors in the area of management and supervision by sponsoring programs designed specifically for those in supervisory and managerial capacities in Ohio dairy plants. Two programs, a Dairy Plant Managers and Supervisors Conference (held on Campus) and Personnel and Efficiency Clinics (held throughout the State) were presented in 1951 and 1953-54 respectively.

The Dairy Plant Managers and Supervisors Conference was a two-day Conference on personnel relations and plant efficiences designed for persons of the junior and middle-management levels. Subject matter content included selecting, inducting and training new employees; personnel supervision; methods and process analysis; plant engineering and preventive maintenance; and plant safety. The Personnel and Efficiency Clinic was presented in cooperation with the four Dairy Technology Societies of Ohio. The program was arranged by Extension Specialists P. R. Ellsworth and Ronald B. Douglas and dealt with job analysis; personnel selection, training and morale; and human relations. There were one-night meetings held in Toledo and Cincinnati in 1953 and in Cleveland and Columbus in 1954.

FIELDMEN'S REVIEWS:

During the late 40's and into the early 60's, the Department cooperated with the Ohio Dairy Products Association (ODPA) in sponsoring one and two-day fieldmen's meetings in the early autumn. These were sometimes held on the Campus and sometimes consisted of a series of meetings in the different sections of the state. The purpose of the meetings was to improve the competencies of dairy plant fieldmen, sanitarians, and other persons working with producers.

A series of three two-day field meetings were held in Washington C. H., Lima and Zanesville in the fall of 1949, under the leadership of Extension Specialist Fred Greiner. These included farm visits and a cream grading clinic.

On October 1, 1954, a one-day fieldmen's meeting was held on the Campus. In 1956, five one-day meetings were held throughout the State in which approximately 250 persons participated. Areas of discussion covered were herd health, dairy production, milk quality, farmer-fieldmen relationships and economic outlook. In 1957, pesticide and antibiotic residues in milk and herd health were highlighted. Sixty-six county Extension personnel and 309 dairy plant fieldmen and sanitarians participated in the five meetings held.

In 1958, Extension Specialist Frank Koval represented the Department in five fieldmen's meetings held in Dayton, Findlay, Akron, Columbus and Cambridge. Approximately 175 persons, most of whom were fieldmen, attended the sessions. Topics covered included feeds and feeding problems and opportunities, increased production per unit, economics of manufactured and fluid milk, and communications. A 1962 meeting was held in Orrville, Findlay and Dayton, with a total attendance of 174. The key subjects were communications, marketing responsibilities, and compliance with sanitation requirements for fluid and manufactured milk.

The last program in this series was held on the Campus in 1963, and featured discussions on job responsibilities and the farmer's economic situation. Approximately 125 fieldmen representing both the fluid and manufactured milk segments of the industry were in attendance.

Over the years, off-Campus leaders in sponsoring and organizing these reviews were the successive Executive-Secretaries of ODPA: O. E. Anderson, Fred J. Greiner, and E. A. Graber, who worked with the Department's Extension personnel - namely Perry R. Ellsworth, Fred J. Greiner, M. E. Gregory, Frank Koval, D. H. Kleyn, and J. H. Martin.

DAIRY PRODUCTS CLINICS:

In the fall of 1949, the Department cooperated with the Ohio Dairy Products Association in conducting ice cream clinics at the nine regional meetings of the Ohio Ice Cream Manufacturers Association. Extension Specialist Perry Ellsworth conducted the clinics.

In the spring of 1952, the Department and ODPA cooperated in sponsoring clinics in cultured products and ice cream. An ice cream clinic

was held in conjunction with the annual meeting of the Ohio Dairy Products Association. More than 60 samples of vanilla and chocolate ice cream were evaluated and discussed by faculty members T. D. Harman and P. R. Ellsworth. Cultured dairy products clinics were held in Columbus, Cleveland and Cincinnati with L. H. Burgwald and T. V. Armstrong serving as official judges.

In the late 1950's, dairy products clinics were held in cooperation with the four Dairy Technology Societies in the State. In the clinics, plant personnel brought samples of their own products for evaluation. In 1957, 265 dairy plant personnel participated in four dairy products clinics involving cottage cheese, cultured buttermilk, and sour cream. In 1958, 180 individuals participated in five clinics involving chocolate milk and cottage cheese. Since 1958, numerous product clinics have been held but as a part of the regular educational programs of the Societies.

CORRESPONDENCE SHORT COURSES:

Even though the regularly scheduled two-week short courses were discontinued in the 1950's due to low registration, there was still a need and a desire for key employees to obtain more knowledge of the technical and operational practices of the industry. On October 16, 1957, the Department launched a correspondence short course in market milk, of five months duration, under the direction of C. L. Hankinson. The course was designed for five one-day monthly meetings at the University and a series of eighteen weekly lessons by correspondence. The sessions at the University involved laboratory and plant demonstrations, lectures, discussions and examinations, and the weekly lessons were reading assignments, problems, projects and examination questions to be completed at home or on the job. The subject matter covered included all phases of market milk operations. The registration fee for the Correspondence Short Course was $50.00. Thirty-one participants successfully completed the course.

BULK MILK HAULER'S TRAINING:

In 1963, as the result of the industrial change from can milk delivery from the farm to the farm bulk pick-up system, a series of two and three-day bulk milk hauler meetings were scheduled in different markets. This was a cooperative venture with the State Departments of Agriculture and Health, local health departments, producer cooperative associations, dairy companies, and the haulers, themselves. These were designed to inform the haulers of the state and local market requirements, to familiarize them with the principles of milk measurement, sampling and handling, and with sanitation procedures, and to bring about a closer relationship between all interested groups. Meetings were held in Columbus, Cincinnati, Canton, and Cleveland with 330 haulers in attendance.

A bulk milk handling refresher course was also presented in the Montgomery County area in 1965 at the request of both dairy companies and the Producer Cooperative. Seventy-five milk haulers and fieldmen attended.

SPECIAL IN-DEPTH COMMODITY COURSES:

To provide maximum service to its clientele, the Department has designed special courses to satisfy the urgent needs of specific groups.

SWISS CHEESE COURSE:

In 1963-64, a special short course was offered for the Ohio Swiss Cheese Association. Initiated December 19, 1963, the program involved five one-day sessions and continued through March, 1964. The course was coordinated by W. L. Slatter and consisted of two one-day sessions at the University, where bacteriological and compositional aspects were emphasized, and three days at Sugarcreek, Ohio, where Robert E. Hardell, Momul, Wisconsin, demonstrated the principles and art of making Swiss cheese. The course included discussions of (a) composition of milk in relation to Swiss cheese manufacture, (b) bacteriological aspects of milk production and Swiss cheese manufacture, (c) the basic principles of Swiss cheese manufacture, and (d) Swiss cheese defects and their control. Forty-three individuals from 19 plants attended.

COMPANY-SUPPORTED COURSES:

In 1968, two courses were held at the request of industrial concerns who desired specific, short-term, in-depth training for a special group of their personnel. One course, supported by the Nestle' Company, was a two-day program in Cheddar Cheese Manufacturing, designed for technical and management personnel. Eighteen representatives attended. T. Kristofferson and W. L. Slatter shared responsibilities for this course. The second was a three-day course in frozen dairy desserts, requested by Foremost Foods Company, planned to provide basic practical information on all aspects of the manufacturing of ice cream and similar products. Twenty-three technical sales and management personnel enrolled. J. B. Lindamood organized and conducted this program.

MILK SECRETION, UDDER HEALTH, AND MILK QUALITY SCHOOLS:

From 1966 through 1969, a series of three-day schools were held on "Milk Secretion, Udder Health and Milk Quality". This was an inter-disciplinary program involving the Departments of Dairy Science and Dairy Technology and the School of Veterinary Science. These were designed for direct producer education and resulted from a request from the County Agent. The Dairy Technology Extension Staff was responsible for the milk quality discussion. Four to six schools were held yearly, each involving 130 to 160 producers.

APPRENTICESHIP TRAINING PROGRAM:

In 1967, the Department offered a six months, Technicians Apprenticeship Training Program which was expanded in 1968 to a nine-months program. The course was designed to provide young people with practical skills, so they could be prepared for employment in the Dairy Industry. Enrollment was limited to six registrants. This was a non-credit sub-professional program in which the student worked four to six hours per day, for which he was paid, and devoted the remainder of his time to in-plant studies, classroom lecture work or assignments. Three men successfully completed the program in 1967 and four men and one lady completed the program in 1968. The program was not offered in 1969 because of insufficient registration.

MISCELLANEOUS:

Throughout the years, the Department and its faculty have cooperated with many groups in sponsoring short-term programs specifically designed for a certain group or to deal with an important problem. Some of these relationships and programs are set forth in the preceding portion of this section. Of the remainder, the following are typical examples:

1934 - Three-day short course for milk and dairy inspectors.

1935 - Two-day course on inspection procedures for employees of the Ohio Department of Agriculture.

1955 - Two-day cream grading clinic held in cooperation of the Federal Food and Drug Administration, the Ohio Department of Agriculture, and the Ohio Dairy Products Association.

1958 - Two meetings on bacterial control for public health sanitarians.

1961 - Two-day conference for manufactured milk fieldmen sponsored cooperatively with the Ohio Dairy Products Association and the Evaporated Milk Association.

1963 - Two-day seminar for Public Health Administrators and Supervisors of Milk Control, and a one-day program on the Interstate Milk Shippers Program; both sponsored cooperatively with the Ohio Department of Health.

1968 - Two-day Food Additives Seminar for public health sanitarians in which the Extension personnel cooperated with the Ohio Department of Health.

"Even a brief exposure
To an educational experience
Will stimulate a man to
Better serve himself and his employer."

THE CONFERENCE:

The Birth: The Conference type of educational program in Dairy Technology had its beginning in 1934 and evolved from the established, long-term short courses in market milk, butter, cheese and ice cream. At that time, the short courses were replaced with a five-day program called "The Short Course In Dairy Technology", which was scheduled in February. In 1935, the name was changed to "The Conference in Dairy Technology". The rationale for the change from short courses to a conference type program as stated by Chairman R. B. Stoltz, of the Department was "We are no longer attempting to teach the fundamentals, such as the composition of milk, the testing of milk, how to operate the freezer, etc. The Dairy Industry has progressed to the point where we think it necessary that anyone who enters it at this time must be trained in the fundamental sciences underlying Dairy Technology, such as chemistry, physics and bacteriology."

The Thirties: At the beginning, the Conference was five days in length, but became a four-day program, Monday through Thursday, during the latter part of the 30's. Each day of the program was designed for a different segment of the industry. In 1937, the four daily programs were designated as General Sessions, Market Milk Session, Ice Cream Session, and Cheese and Butter Session. In 1938, nutrition was featured as a part of the General Session and Cheese was not discussed. In 1939, a one-day program for Dairy Inspectors replaced the Butter phase of the program. Each year, a banquet with a featured speaker, constituted a part of the program. During this period, there was no registration fee, but there was a one dollar charge for bound copy of the abstracts.

The general plan for the Conference during the 30's set a pattern for the years to come. The talks were given by visiting speakers and by members of the OSU faculty, with six to eight presentations each day. Approximately 15 visiting speakers participated in each of the Conferences during this period and included such well recognized authorities as W. E. Krauss, Ohio Agr. Exp. Sta., Wooster; H. F Judkins, Natl. Dy. Prods. Corp., N. Y.; C. A. Iverson, Iowa State College; E. H. Parfitt, Purdue University; A. W. Farrell, Creamery Package Mnfg. Co.; Chicago; H. W. Gregory, Purdue University; Harold Macy, University of Minnesota; P. H. Tracy, University of Illinois; R. E. Hardell, U. S. Department of Agriculture; M. T. Prucha, University of Illinois; and Paul F. Sharp, Cornell University.

The Forties: The general foremat of the Conference continued through the 1940-1949 period. In 1940 through 1942, a joint evening meeting of the Central Ohio and Cleveland Dairy Technology Societies was held in connection with the Conference. In 1943, the Ohio Dairy Technology Societies became a part of the Annual Conference Banquet. The four-day program, but scheduled for Tuesday through Friday, continued through 1943. In 1940, the four days were designated as Dairy Sanitation, Market Milk, Plant Operation, and Ice Cream; in 1941 they were Milk Sanitarians, Market Milk, Ice Cream, and Butter, in 1942 they were Fieldmen, Market Milk, Ice Cream, and Dairy Products, and in 1943 they were Fieldmen, Market Milk, Ice Cream, and Butter and Cheese.

In 1944, the Conference program became four and one-half days in length, beginning on Monday afternoon. A registration fee of one dollar was charged which included a bound copy of abstracts of the papers presented. During the period of 1944-1949, the individual days were not identified in the printed program as to subject matter, but the topics listed indicated that field problems, sanitation, market milk, butter, cheese and ice cream continued to be given major attention. The topics listed dealing with field work and ice cream appeared to be more completely segregated in the program than did the discussions on other subjects.

During 1940-1949, the number of visiting speakers of each conference and the number of topics were approximately the same as for the previous period, with the exception that 26 visiting speakers appeared on the 1944 program; in considerable contrast to the 11-15 who participated in the other Conference programs for this decade.

Included among the distinguished visiting speakers for this decade (who did not appear earlier) were C. J. Babcock, U. S. Army Surgeons General Office, Washington, D. C; A. C. Dahlberg, Cornell University; D. D. Heiser, University of Wisconsin; H. R. Lochry, U.S. Department of Agriculture, Washington, D. C.; R. S. Ramsey, The Ramsey Laboratories, Cleveland; F. J. Babel, Purdue University; J. H. Erb, The Borden Co., Columbus; B. F. Horrall, Kraft Foods, Co., Chicago; George H. Hopson, DeLaval Separator Co., New York; W. L. Mallman, Michigan State University; B. W. Webb, U. S. Department of Agriculture, Washington, D. C.; P. S. Lucas, Michigan State University; E. W. Bird, Iowa State College, Russell Fifer, Amer. Butter Inst., Chicago; T. Kline Hamilton, Diamond Milk Products Co., Columbus; R. J. Remaley, Kraft Foods Co., Chicago.

The Fifties: In 1950, an expansion of the Conference program began in terms of the number of topics and speakers. During the decade, the majority of the programs had from 24 to 39 visiting participants. The program became four days in length, Tuesday through Friday with individual days devoted to different commodity or specialized groups. A two-dollar registration fee was established which included the cost of the bound abstracts of the presentation. In 1953, the printed program was changed from black on white to a scarlet and gray combination (an innovation which has continued to the current time) and the practice was initiated of designating a Theme for the

program. The Theme for 1953 was "Prepare Today for Tomorrow's Challenge". Through the early years of this decade, one day was devoted to butter or to butter and cheese, one to field problems, one to market milk or market milk and engineering, and one day to ice cream and concentrated milk products. The largest share of time was devoted to the field section. The butter and cheese program was replaced with a manufactured products program in 1958. This year, the Conference was identified as the Silver Jubilee Program commemorating the 25th year in the history of the event. The registration fee was increased to $3.00. At about this time as the result of a recommendation of an industry advisory group, the preparation of a bound volume of the abstracts was discontinued.

The 26th Annual Conference in 1959 marked another enlargement in the scope and coverage of the conference. Fifty-two visiting speakers and chairmen participated; and the Theme was "Making Dollars With Sense". The program was shortened to three days (Tuesday through Thursday) but with simultaneous sessions. Two days were devoted to the Field program, with a part of this being designed for separate sessions for the Fluid Milk and the Manufacturing Milk interests. The other sections of the program were Dairy Engineering and Sanitation, Dairy Plant Management and Operations, Quality Control and Cultured Dairy Products, and Ice Cream Operations. The sections and the subject matter were designed in keeping with industry's expressed need. The inclusion of the management section was an entirely new approach. The printed program contained a letter of invitation from Department Chairman I. A. Gould, and detailed information about off-campus lodging. These features became a permanent part of the printed program in subsequent years.

The Sixties: The Conference continued with the three-day five-section, foremat into the 1960's but with "Engineering" or "Processing and Engineering" becoming one section and the term "Frozen Dairy Desserts" replacing the "Ice Cream Operations". The name of the Conference was changed to "Dairy Industry Conference" in 1963 in order to better reflect the broad coverage of the subject matter. The Theme of this year was "Ideas for Action". Since this marked the third decade of the Conference, Chairman Gould stated in his invitational letter "... the Conference is not intended to encourage reminiscing of the past, but rather to stimulate visions of the future".

During this period, with the decreasing number of dairy plants in Ohio, special efforts were made to promote the Conference in all surrounding states and in many of the larger markets. Attendance from outside of Ohio became a significant factor. An additional section entitled "Manufactured Products" or "Manufacturing Milk and Milk Products" was added in 1965-1967. The Milk Supply Program (Previously Field Program), was continued as a two-day section - but with no separate sessions for fluid and manufacturing milk interests. The number of visiting speakers and chairman prevailed at the 55-65 level during the 1960's.

In 1968, the Conference consisted basically of nine different sections, including Milk Supply (2 days), Specialty Products (0.5 day), Supervisors and Supervision (0.5 day), Marketing and Management (1 day),

Engineering and Processing (1 day), Laboratory Control (0.5 day), Acid-Type Dairy Foods (0.5 day), and Frozen Dairy Desserts (1 day). This year's Theme was "Frontiers in Focus", of which Chairman Gould stated in his invitational letter "The vast unexplored frontiers that lie ahead should invite and not frighten; should provide hope and not fear for those who dare approach them with knowledge, vision and enthusiasm".

In 1969, in an effort to build more in-depth education into the programs, certain of the sections underwent further change. The sections on Milk Supply, Engineering and Processing, Marketing and Management and Frozen Dairy Desserts were continued, but new sections were included on Microbiology and Fermentation, (to provide basics of bacteriology and cultured dairy foods), Personnel Development, and Food Development and Utilization (to permit adequate treatment of the fundamentals of component selection and interaction as related to food development). Fifty-seven visiting speakers and chairmen participated in the program. A special workshop on decision making was incorporated in the management program under the auspices of the dairy marketing faculty from the Department of Agricultural Economics and Rural Sociology. In fact, during the late 60's this faculty assumed responsibility for the Marketing and Management Section of the program.

Throughout the years, since 1943, the Annual banquet program was sponsored cooperatively by the Department and the four Dairy Societies of Ohio and usually featured an outstanding, inspirational and humorous speaker.

During the 60's, the cost of the conference increased steadily, and fees were increased to abide with University requirements that the program be completely self-supporting. The fee was four dollars in 1960, five dollars in 1966 and $7.50 in 1969.

Two Decades of Speakers: The success of the conferences through the 1950's and 1960's was due to the many speakers who gave freely of their time and talents in presenting valuable and timely information. Space does not permit the listing of all of them. However, several faculty members from other institutions served as the "backbone" of each conference. Therefor, it is appropriate to list these participants, some of whom appeared in more than one conference. For the 1950's these included: W. J. Caulfield, Iowa State University; H. A. Ruche, University of Illinois; L. C. Thomsen, University of Wisconsin; L. K. Crowe, University of Nebraska; T. R. Freeman, University of Kentucky; H. W. Gregory, Purdue University; R. F. Holland, Cornell University; J. C. Shaw, University of Maryland; W. B. Combs, University of Minnesota; K. C. Olson, Oklahoma State University; I. E. Parkin, Pennsylvania State University; J. O. Barkman, University of Kentucky; H. E. Calbert, University of Wisconsin; J. J. Sheuring, University of Georgia; W. S. Arbuckle, University of Maryland; E. Wallenfeldt, University of Wisconsin; S. J. Weese, West Virginia University; F. J. Arnold, Iowa State College; H. B. Henderson, University of Georgia; W. V. Price, University of Wisconsin; G. M. Trout, Michigan State University; C. B. Hall, Michigan State University; E. O. Herreid, University of Illinois; F. E. Nelson, Iowa State University; W. M. Roberts, North Carolina State University;

C. F. French, Purdue University; M. L. Speck, North Carolina State University; and J. Tobias, University of Illinois.

For the 1960's these included (if not listed previously: T. I. Hedrick, Michigan State University; J. J. Jezeski, University of Minnesota; V. H. Nielsen, Iowa State University; J. C. White, Cornell University; L. R. Dowd, University of Conneticut; L. C. Harmon, Michigan State University; F. V. Kosikowski, Cornell University; D. L. Murray, Michigan State University; J. C. Leeder, Rutgers University; J. C. Olson, University of Minnesota; C. E. Parmelee, Purdue University; S. T. Coulter, University of Minnesota; D. V. Josephson, Pennsylvania State University; J. J. Sheuring, University of Georgia; D. R. Frazeur, Purdue University; B. J. Liska, Prudue University; E. N. Babb, Purdue University; R. P. March, Cornell University; A. L. Rippen, Michigan State University; E. L. Thomas, University of Minnesota; H. V. Atherton, University of Vermont; G. H. Watrous, Jr., Pennsylvania State University, W. C. Winder, University of Wisconsin; W. L. Dunkley, University of California; M. Loewenstein, University of Georgia; G. W. Reinbold, Iowa State University; D. K. Bandler, Cornell University; and W. T. Butz, Pennsylvania State University.

Registration and Summary: In view of the demise of many state conferences over the years due to the change in the Dairy Industry and the resulting lack of attendance, one may be impressed by the continuous high level of attendance at the Ohio Conference as revealed by the following figures for the past twenty years:

Year	Registrants	Year	Registrants
1950	432	1960	451
1951	345	1961	431
1952	349	1962	411
1953	386	1963	446
1954	398	1964	438
1955	417	1965	477
1956	477	1966	459
1957	441	1967	455
1958	402	1968	433
1959	487	1969	379

The maintenance of the registration is undoubtedly due to the breadth and depth of the program, the timeliness of the subject, the fine array of speakers, and the wider geographical base of attendance. Many of the great leaders of the Dairy Industry of the past and the present, specialists in all segments of education, industry, and public health, have participated in the conference programs and have contributed to its success.

As one reviews the subject matter over the history of the Conference, one is impressed with both the differences and the sameness of the programs from one decade to another. There are obvious differences in emphasis on products and problems with the passing of time; however, there is a

remarkable sameness of the topics to which attention is given. Mastitis, sanitation, methods and materials, quality control, flavors, producer relations, and plant efficiencies were listed just as frequently in the 60's as they were in the much earlier days. Needless to say, the complexity of the problems appeared to increase with time. Over the years, there was an obvious shift from emphasis on butter and cheese to specialty manufactured foods, and from simple, equipment, heating and engineering methods to more sophisticated systems.

PROJECTION:

As the Conference enters a new decade, there is considerable speculation and concern as to its long-range future in the face of structural changes in the industry, a continuing diminishing in the number of dairy plants, and the potential danger of a corresponding decrease in attendance. If the Conference does, in time, fade from the scene, it will not be because of lack of interest and action by the faculty of the Department, but simply because of insufficient industry support to make it self-financing. The history of even the next decade will be revealing in this respect.

"To guarantee protection of the consumer
Is the ultimate objective of public health.
And are not training and learning
Essential to this goal?"

INITIAL ACTION:

In 1952, largely in recognition of the need to provide in-service training for milk sanitarians and other public health and regulatory personnel, a five-day program entitled "Ohio Milk Sanitarians Short Course" was initiated for March 31 - April 4, in cooperation with the Ohio Departments of Health and Agriculture. Ray B. Watts of the Ohio Department of Health and O. L. Hunnicutt of the Ohio Department of Agriculture were the major contributors to this new venture. This program, in various modified forms, has continued as a major Department program since its inception.

The initial subject matter consisted largely of an analysis of health department functions, relationships of the milk sanitarians with producers and processors, discussions on cleaners and sanitizers and their uses, practices in farm and plant inspections, the use of inspection forms, and the interpretation of inspection results. Actual inspections of farms and plants were made and the results analyzed by public health leaders.

The presenters and discussion leaders were largely from the staff of the two cooperating State departments and the Department of Dairy Technology. Special credit in the earlier days of the program is due to Ray Watts and M. J. Dotter of the Department of Health, O. L. Hunnicutt and C. W. Van Schoik of the Department of Agriculture, J. H. Drager of the Columbus Department of Health and L. H. Burgwald, P. R. Ellsworth, Extension Specialist, and R. B. Douglas, Extension Specialist, of the Department.

Approximately 50 individuals registered for the first program. A $4.00 fee was assessed for the five-day program.

Within a few years the program was re-structured as a two-phase, two-year training course - with the first phase designed for the beginners in public health and inspection work and the second phase for those with more experience and holding higher positions of responsibility. By 1957, this new program was in effect. The first phase of the program was basically that used in the initial program, but the second phase placed heavy stress on equipment, engineering and processes as these involved fluid milk. High-temperature pasteurization and cleaning-in-place systems, pipeline milkers and bulk tank milk collection as related to health and regulating problems were of main concern. With this change in foremat, additional efforts were expended to obtain a greater attendance from those employed in the commercial segment of the industry concerned with sanitation; with the aim of creating a better understanding between health, plant and

CHANGES AND RESULTS:

With this change in foremat, greater use was made of specialists from the commercial industry. D. A. Seiberling, formerly of the Department and later with the Klenzade Corp. contributed heavily to these early courses and has continued to participate generously in this program throughout its history. L. C. Burkey, Creamery Package Mfg. Co., and K. T. Yoder, Diamond Milk Company, were important participants in the engineering and equipment phases, and C. Crosby, DeLaval Separator Company made a major contribution to milking equipment and systems. For the Department, Frank Koval, Extension Specialist, assisted significantly during the 50's. During this period, representatives from the U. S. Public Health Service took an active part, particularly L. C. Peckham from the Chicago District.

A feature of the short course during this period was an opening keynote address. Those who made this presentation included K. Weckel, University of Wisconsin, W. M. Roberts, North Carolina State University, and H. S. Adams, University of Indiana.

The Annual registration during the 1952 - 1959 period approximated 75 with the paid registration fluctuating between 45 to 60. In 1958, the fee was increased to $10.

The foremat used for the late 1950's continued into the 60's and attendance was maintained at about the same level for a few years and then declined. W. L. Slatter of the Department's faculty had principal responsibility for the program for several years. For the 60's, the keynote speakers for the opening session included Harold E. Robinson, U. S. Public Health Service, G. M. Trout, Michigan State University, V. H. Nielsen, Iowa State University, P. J. Betcher, French-Bauer Dairy Co., Cincinnati, W. J. Bashe, University of Cincinnati and M. S. Keller, Ohio State University (Preventive Medicine). Other visiting University personnel who assisted with the program included F. J. Bable, Purdue University, A. L. Rippen and L. C. Harmon, Michigan State University, H. E. Randolph, University of Kentucky, and E. H. Marth, University of Wisconsin. Principal industry participants (not previously listed) included J. R. Kelsey and E. W. Volkman, U. S. Public Health representatives included V. Grace, E. Egan, W. R. McLean, and R. L. Sanders, at different times during this period.

Special Seminar and Conference: A "Seminar for Administrators and Supervisors in Milk and Public Health"; for either two or three days was scheduled as a part of the Short Course in 1962-1963. In 1963, the name of the short course became "The Ohio Forum on Milk Sanitation and Public Health". This year, a one-day program identified as the "Second Annual Interstate Milk Shippers Conference" was included as a part of the total program. The fees were $10 for the short course, $4 for the Administrators Seminar, and $2 for the Interstate Program.

The Workshop Broadened: In 1966, because of steadily decreasing attendance and the desire to obtain more registration from the industry section, both the foremat of the course and its name was changed. These

alterations in the foremat have essentially continued to the present day. The "Ohio Workshop in Milk Sanitation" was the newly adopted name. The program remained as a five-day program, scheduled in March, but with each day designed to cover fully a given subject - from the elements of the application. Registration could be for one or more days (fee $5/day) or for the entire program, (fee $20). The first day dealt with Bacteriology, and second with Dairy Farm Practices, the third with Elements of Cleaning and Sanitizing, the fourth with Milk Pasteurization (Equipment, Methods, Controls), and the last day with Dairy Plant Practices.

A significant increase in registration for the short course began with the change in the foremat, with heavier enrollment from the dairy plants. In 1966, 73 industry representatives and 51 public health personnel registered, with the sum of the daily registrations totalling 328. This is in contrast to 28 paid registrants for the 5-day program in 1963.

In 1967, a further change in the program occurred. Because of the geographical area being served by the course, the name was changed to "The Mid-West Workshop in Sanitary Science", and the program was enlarged to include a new 5-day section on Food Protection (for sanitarians responsible for food service establishments) and another 2-day section in Community Health - with specific references to Hazardous Substances. The latter two were restricted to public health and regulatory personnel. Individual registration was 151, but the sum of the daily registration totaled 233.

In 1968, the Milk Sanitation and Food Protection Sections were continued, but the third section was Community Sanitation, with emphasis on Rodent Control. The latter was restricted to public health personnel.

The 1969 program followed the same basic foremat with the exception that a section on General Sanitation (Camp and Swimming Pool) replaced that of Community Sanitation. For the 1969 event, the total paid registration was 204, with 15 coming from out-of-state. The Milk Sanitation program had a total individual registration of 105, approximately equally divided between industry and health personnel. There were 67 and 32 individuals registered for the Food Protection and General Sanitation Sections, respectively.

The success of the sanitation and public health program over the years is in no small measure due to the cooperation and active participation of representatives from the two cooperating State Departments, the U. S. Public Health Service (Chicago District Office), The National Center for Urban and Industrial Health in Cincinnati, other Universities, the commercial industry, and other Departments on the OSU campus. Space does not permit the listing of all who deserve recognition. However, special credit should be given to D. A. Seiberling, The Klenzade Corporation, Beloit, Wisconsin, Harold Wainess, Consultant, Chicago, who participated annually in the program over a period of years.

In more recent years, the participation of H. L. Faig, National Center for Urban and Industrial Health, Cincinnati, E. T. Masterleo,

Equipment Service, Columbus, and D. Hartley, National Automatic Merchandising Association, Chicago, deserve recognition. Also, credit is due to the principal representative of the cooperating Ohio Departments: Ray B. Watts, Max L. Bunce, Richard M. Martin, Earl M. Helmreich, J. O. Frazier (responsible for the Food Protection Program) of the Ohio Department of Health and Max Weimer, Ohio Department of Agriculture. It is because of the above-listed persons, as well as all other participants in the program that the workshop has gained national prominence.

As one perceives the future, it would appear that this workshop can serve even more effectively as an important vehicle for providing additional opportunity for interested and qualified persons to obtain valuable training in all aspects of sanitation as these relate to every segment of American life. The course of its beginning was a very narrow, elemental program, but with time this became an in-depth, refresher, professionalized program especially suitable for persons holding responsible positions. The diversification of the program into the non-food aspects of sanitation offers almost unlimited opportunity for growth and service.

SPECIAL EVENTS

HONORS

THE COUNCIL

SPECIAL RECOGNITIONS AND AWARDS

"So to conduct one's life as to realize oneself - this seems to me the highest attainment possible to a human being. It is the task of one and all of us, but most of us bungle it. - Ibsen"

During the 50's and 60's, The Department established several awards by which public recognition could be given and appreciation expressed to individuals who had contributed significantly to the welfare of The Department and the industry. The following identifies the particular award and the affiliation of the recipient at the time of presentation.

CERTIFICATES OF APPRECIATION:

1952 - O. E. Anderson, Exec. Secretary, Ohio Dairy Products Association - for his cooperation with The Department in sponsoring educational programs and his sincere interest in the welfare of the Department.

1955 - C. T. Alexander, Field Director, M & R Dietetics Laboratories, Columbus - for his dedicated participation in short courses and 4-year courses sponsored by The Department as these related to milk supplies and field programs.

1957 - Dr. E. F. Almy, Professor, Department of Agricultural Biochemistry - for his warm cooperation with The Dairy Technology faculty in matters pertaining to teaching and research and for his years of dedicated teaching of students in Dairy Chemistry.

1960 - Clarence J. Ludwig, Vice President and Personnel Director, Babcock Dairy Co., Toledo - for his devoted efforts in the recruitment of youth for the Dairy Industry.

1963 - Oram C. Woolpert, Executive Director, Ohio State University Research Foundation - for his invaluable encouragement, objective counseling and warm personal interest in the research program in Dairy Technology.

1963 - Henry E. Abell, President Elm Farm Milk Co., Medina, Ohio - for his unselfish and enthusiastic contribution to the student recruitment program and to other activities of The Department.

1963 - Dr. Harry H. Weiser, Professor of Bacteriology, The Ohio State University - for his contributions to the education of students in Dairy Microbiology and his friendly cooperation and assistance with many educational activities over a lifetime of service on the University Campus.

1964 - Edgar Leroy Cavitt, Secretary, Stark County Dairy Products Association - for his years of devoted and fruitful service to Ohio's Dairy Industry and his keen personal interest and assistance in recruiting youth for careers in The Industry.

1965 - Benjamin F. Forbes, President, The Benjamin P. Forbes Company, Cleveland - for dynamic leadership, personal interest, and dedicated efforts in recruitment and scholarship programs for the Dairy Food Industry, and for his enthusiastic cooperation with the Department in all matters pertaining to career opportunities for youth.

1967 - Carl M. Crosby, Division Supervisor, DeLaval Separator Company, Van Wert, Ohio - for his outstanding contributions to the knowledge of milk production technology and his generous participation in Department programs designed to create an enlightened public relative to milk production practices.

MERIT AWARD IN MILK SANITATION:

1966 - Ray B. Watts, Chief, Division of Sanitation, Ohio Department of Health - in recognition of his outstanding leadership in the field of Milk Sanitation in Ohio and his cooperation with the Department in initiating, sponsoring, and developing special educational programs designed to advance the knowledge of Milk Sanitation.

DISTINGUISHED SERVICE AWARD:

1965 - T. Scott Sutton, Associate Dean, College of Agriculture and Home Economics, Assistant Director, Ohio Agricultural Research and Development Center - for his outstanding contributions as a teacher, editor, research worker, and administrator with particular reference to The Dairy Foods Industry and The Department of Dairy Technology.

AWARD OF MERIT:

This is recognized as the "gold medal" award of the Department for Ohio's Dairy Executives, presented to individuals who had distinguished themselves as industrial executives and who, over years of service, contributed significantly to the welfare of The Dairy Industry by dedicated and unselfish leadership. The majority of these were close friends and personal counselors of the Department - and supported the Department's program with money, talent, and time. To these men - and others like them - The Dairy Industry of Ohio - and the Department - owe a deep debt of gratitude. The Awards have all been made at The Annual Dairy Technology Homecoming Celebration. Some of the recipients were graduates of the Department.

1949 - H. Fred Meyer, President, Meyer Dairy Products Co., Cleveland.

1950 - Arthur J. Good, President, Pickerington Creamery, Co., Pickerington.

1951 - Everett Antrim, Retired Executive, Worthington.

1952 - T. Kline Hamilton, President, Diamond Milk Products Co., Columbus.

1953 - Fred M. Campbell, President, Andalusia Dairy, Salem.

1954 - Irving C. Reynolds, President, Franklin Ice Cream Co., Toledo.

1955 - Ralph M. Jewell, President, Jewell Milk and Ice Cream Co., Mt. Vernon.

1956 - Virgil O. Dreyer, Manager, Borden's Finch Farms, Dayton.

1957 - Philip L. Haymes, Executive, United Milk Products Co., Cleveland.

1958 - Lester R. Stouffer, President, Warren Sanitary Milk Co., Warren.

1959 - J. Hoffman Erb, Vice President, Borden's Midwest Division, Columbus.

1960 - Earl Grieser, President, Napoleon Creamery Co., Napoleon.

1961 - Fred S. Harter, Board Chairman, Reiter-Harter Dairy, Akron.

1962 - Wayne H. Babcock, President, Babcock Dairy Co., Toledo.

1963 - A. C. Routh, Jr., President, Esmund Dairy Co., Sandusky.

1964 - Leslie C. Mapp, General Manager, Miami Valley Milk Producers Assn., Dayton.

1968 - Harold G. Sewell, President, Chestnut Ridge Dairies, Inc., Akron and Ravenna.

DISTINGUISHED ALUMNI AWARD:

This Award was established for the purpose of recognizing Alumni residing outside of Ohio who have distinguished themselves as industrial executives, as effective leaders, and as significant contributors to programs designed to improve the welfare of the Industry. The presentations were made at the Homecoming Celebration.

1965 - Jack B. Pentz, '27, President, Borden's Milk and Ice Cream Division, New York.

1966 - Paul R. Dew, '45, Executive Vice President, Fairmont Foods Co., Eastern Division, Philadelphia.

1967 - Glen A. Boger, '15, President (retired), Lehigh Valley Cooperative Farmers, Allentown, Pa.

1968 - Mitsugi Satow, B.S. '21, M.S. '22, Chairman, Board of Directors, Snow Brand Milk Products Co., Ltd., Japan.

DAIRY TECHNOLOGY HOMECOMING

"Oh, Come, let's sing Ohio's praise,
And songs to Alma Mater raise."

A positive step to maintain and strengthen the traditional, close relationship between the graduates and the Department was undertaken on November 19, 1949 with the introduction of the Dairy Technology Homecoming Celebration. Seventy-five graduates, wives and friends attended this first homecoming. At this initial Homecoming event, H. Fred Meyer, Meyer Dairy Products Company, Cleveland was presented the first Award of Merit, a recognition by the Dairy Technology Faculty to deserving persons in Ohio for their years of "unselfish and meritorious service to the Dairy Industry."

The Homecoming Celebration and Brunch became a popular and well-attended affair, held annually since 1949, and scheduled on the same date as the official University Homecoming.

Attendance averaged about 150 during the 1950's and about 225 during the 1960's.

At the first homecoming event, the alumnus who came the greatest distance was Richard Dressel, Miami, Florida and the oldest class represented was that of 1914 by W. I. Geisman and L. H. Burgwald. An added feature of the 1950 Homecoming Celebration was thirteen inches of snow which closed the University for three days. Homecoming of 1952 was the occasion for the 10th Reunion of the Class of 1942 and in 1967 it celebrated its Silver Jubilee with 14 of its members in attendance.

Homecoming 1968 was dedicated to the memory of the late Professor Emeritus Louis H. Burgwald, "whose teachings, philosophy, and friendship during his years in the Department shaped the careers of many successful graduates".

In 1964, Frank Koval, M.S. '58 presented Department Chairman I. A. Gould with a framed Certificate as a token of appreciation of the Alumni to the Department for sponsoring the Annual Homecoming Celebration.

A feature of the Homecoming programs has been the presentation of Department Awards to distinguished dairy executives and alumni. These included the Award of Merit to outstanding Dairy Leaders of Ohio, the Distinguished Alumni Award to outstanding graduates living outside of Ohio, and other special awards for distinguished service to the industry and to the Department. Over the years, 16 Awards of Merit, four Distinguished Alumni Awards, and six special awards have been presented at the Homecoming program.

Alumni have had a part in every homecoming event, serving either as chairmen of the Brunch and Program phase or as a spokesmen for their respective classes. Among the alumni participants were the following:

Wayne Babcock '39; W. I. Geissman '14; Norbert Woebkenberg '36; Virgil Dreyer '17; David Davis '36; H. L. Mitten '42; Wayne Babcock '39; Bert Taylor '53; D. G. Waller '42; Ward K. Holm '42; Clyde E. Bresler '38; Frank Koval '58; J. G. Leeder '38; Wayne Woodyard '40; Perry Ellsworth '42; W. R. Zink '48.

THE DAIRY TECHNOLOGY ADVISORY COUNCIL

"One learns much
By listening to the counsel
Of the wise."

THE BACKGROUND AND ORGANIZATION:

In relatively recent years, the rapid and drastic change in the structure of the Dairy Industry of Ohio has led to the marked decrease in the number of dairy processing and manufacturing companies, the emergence of fewer and much larger organizations, and constantly increasing pressures on the executives responsible for guiding the destinies of these complex units. With these changes, it became apparent to the faculty of the Department that action was necessary by which these executives could be kept familiar with the programs, hopes, and aspirations of the Department and, in return, these dairy leaders could share their views as to what the Department should do to continue to be of maximum value in terms of teaching, research, and service. Consequently, in 1964, The Dairy Technology Advisory Council on Education and Research was organized. This body was to be composed of 12-15 dairy executives who were recognized dairy leaders in Ohio and who had a keen interest in the welfare of the Department.

Since its inception, the Council has spent one day each year in the Department for the purpose of reviewing and evaluating the Department's programs, plans, and activities, and offering counsel on actions to take. Between these meetings, the Council members were asked to react to various situations that had a bearing on the current and future role of the Department. The first meeting was held October 23, 1964.

MEMBERS:

Those who have served on the Council - or are now serving - include the following:

W. H. Babcock, President, The Babcock Dairy Co., Toledo

P. J. Betscher, General Manager, French Bauer Dairy Co., Cincinnati

C. L. Broughton, President, Broughton's Farm Dairy, Marietta

J. A. Cornett, Manager, Dairy & Egg Operations, The Kroger Co., Cincinnati

O. A. Dean, President, O. A. Dean Milk Co., Cleveland

W. A. Diehl, President, The Defiance Milk Products Co., Defiance

J. H. Erb, Vice President, Midwest Div., The Borden Co., Columbus

D. B. Falconer, Vice President, Sealtest Foods, Cleveland

R. J. Gilbert, Manager, Pet, Incorporated, Bryan

A. J. Good, President, Pickerington Creamery Co., Pickerington

R. D. Graham, Manager, Beatrice Foods Co., New Bremen

T. K. Hamilton, President, Diamond Milk Products, Inc., Columbus

G. M. Huheey, Vice President, Cedar Hills Dairy, Cincinnati

J. A. Karr, Manager, Dairy and Egg Operations, The Kroger Co., Cincinnati

J. F. Kofron, Jr., President, Hillside-Old Meadow Dairy, Cleveland

A. T. Mussett, Manager, Beatrice Foods Co., New Bremen

H. F. Reiter, President, Reiter & Harter, Inc., Akron

R. S. Reiter, President, Reiter & Harter, Inc., Akron

R. M. Ross, President, Ross Laboratories, Inc., Columbus

A. C. Routh, Jr., President, The Esmond Dairy Co., Sandusky

H. G. Sewell, President, Chestnut Ridge Dairy, Akron

J. E. Weiskircher, President, United Ohio Valley Dairy, Inc., Cambridge

W. R. Zink, Beatrice Foods Company, Pittsburgh

PROJECTIONS - PEOPLE AND THE FUTURE

FUTURE GOALS

"Study the past
If you would
Devine the future. - Confucius"

In 1967 and 1968, the Department was required to present six-year plans to the University Administration which would identify the goals and recommend action for their attainment. In the 1967 statement, the recommendation was made that action be taken to establish at the University a Center for Food Science and Technology to be coordinated at the College level, and to be composed of all elements in the College concerned with teaching, research, or Extension activities as related to the total food industry. In such a structure, the Department of Dairy Technology would have existed as a section or division devoted to Dairy and Related Foods. No subsequent action resulted from this recommendation.

In 1968, the Six-Year Plan of the Department identified the following eight needs or goals: (1) For the University to provide funds for additional teaching graduate students; (2) To establish a Food Protein Utilization (Resource) Center, international in scope with the Department serving as the nucleus for this multidisciplinary unit; (3) To develop greater strength in Microbial Fermentations with relationship to new and improved foods; (4) To improve the audio-visual instruction facilities in order to insure more effective teaching in both degree and non-degree programs; (5) To intensify the efforts to develop a program in Dairy Foods especially designed for international participation at the undergraduate, graduate, and non-degree levels; (6) To alter physical facilities in Vivian Hall so as to provide for a flavor evaluation center; (7) To build a broad inter-disciplinary educational program in Sanitary or Environmental Health which would make possible the establishment of undergraduate and graduate programs in public health at the University; and (8) To improve the equipment and building for teaching and research in Food Processing Engineering.

As this decade comes to a close there has been no noteworthy progress made for the Department to satisfy these needs or achieve these goals, with the exception of the Protein Resource Center. Action to achieve this particular goal reached the point in January, 1969, of providing to the U. S. Agency for International Development, at its request, a five-year plan for developing the Protein Resource Center. This proposal was supported by the University through commitments by the University President, Novice G. Fawcett, and the Dean of Agriculture and Home Economics, Roy M. Kottman. Additional financial assistance to strengthen the protein program in 1968-69 was provided by the University Office for Research under the direction of Vice-President, Dr. A. B. Garrett. This assistance made possible the temporary addition to the faculty as a visiting Associate Professor a well-known protein scientist, Ronald D. Hill, Principal Research Scientist, Commonwealth Scientific and Industrial Research Organization, Australia.

Whether any or all of these six-year objectives will be reached, or even initiated, must now await the 1970's and beyond. One is well aware, too, that objectives will be adjusted with time and change, and the extent with which the major objectives of the 1968 six-year plan will remain as high priorities will be governed by the events of the near future.

"What's in a Name?"

"A rose by any other name
Will smell as sweet!"

The adoption of the name "Dairy Technology" for the Department when it was created in 1929 was a stroke of genius - since it brought into prominence the clear-cut identification of the educational program for those who desired to prepare for careers in the dairy processing and manufacturing industries. This move, and the simultaneous introduction of the Dairy Technology Degree program, provided the impetus for similar changes in the structure, curricula and courses in other institutions. The term "Dairy Technologist" then became the professional trademark for those who had fulfilled the degree requirements in these programs.

In the 50's and 60's, the structure of the Dairy Industry changed drastically with the major dairy organizations becoming more heavily engaged in non-dairy food enterprises. Consequently, the word "food" in its broadest connotation came into prominence - and the term "Food Technologist" was accepted as applying to an individual who had been prepared to a greater or lesser degree, in a variety of food subjects at the undergraduate or graduate level. Also during this period, it became increasingly difficult to attract the youth to the Dairy Technology program, even though extensive recruitment efforts were expanded. The term "technologist" was frequently considered to carry a vocational rather than a professional connotation by those who were not familiar with the field or the curriculum which was provided. The question then arose if the time had not come to consider a change in the name of the Department to one that would be more in line with the structural alterations in the commercial food industry and have greater meaning for high school principals, counselors, and students, for prospective graduate students and for future employers of the graduates.

To explore the possibility of a name change for the Department, a survey of the alumni was made in the middle 50's. Of 461 questionnaires distributed, 185 were returned. Of these, only 23 were opposed to a name change, but there was lack of any agreement as to a more appropriate name. In addition to five possible names suggested in the questionnaire, eight others were proposed. In view of this response, it was decided to postpone action until a name could be found which would be made acceptable.

In 1968, another step was taken to explore the possibility of a change in the name of the Department. From an original 27 names, and after a review with the Advisory Council of the Department, eight names were submitted to the Alumni for consideration: Department of (a) Dairy Technology, (b) Dairy Foods, (c) Dairy Foods and Industries, (d) Dairy Food Science, (e) Dairy Food Science and Technology, (f) Industrial Dairying, (g) Dairy Food Industry, (h) Dairy Food Science and Management. Of the 675 questionnaires distributed, 285 were returned. Eighty-five

expressed a preference for retaining the present name, 200 signified a preference for a change. Of the alternative names, Department of (a) Dairy Food Science and Technology, (b) Dairy Food Science and Management, (c) Dairy Food Science, and (d) Dairy Foods were given the highest preferences.

Subsequently, additional faculty reviews and analyses were made and the results indicated the possibility that other names will be considered before a decision is reached. From the standpoint of the future, the evidence suggests that the early 70's will witness a change in the name of the Department; with the aim of selecting a name which will give the Department a renewed viability, visibility, and thrust similar to that provided when "Dairy Technology" was adopted for the "new" Department in 1929. Certainly, it will be the objective to select a name which will more clearly reveal the expanded scope of the Department's role in education, research, and industry relations in the years to come.

"It is not the bricks and mortar
But the faculty
That will determine the greatness
Or the lack of it
In any educational institution."

As a closing section of this history, it seems fitting to present information on the current faculty members in the Department which will reveal their backgrounds, their achievements, and their contributions. Such information will then provide the foundation for the subsequent changes in Dairy Technology that will come in the succeeding decades - since such changes, as they have in the past, will depend upon the people who will develop the plans and shape and direct the programs.

Ira A. Gould, Chairman and Professor. Native of Kansas. Degrees: B.S., West Virginia University, M.S., Michigan State University, Ph.D. University of Wisconsin. Former Staff member, Michigan State University and University of Maryland. Joined Staff in 1949. Specialties: Administration, Industrial Management, Biochemistry of Milk and Milk Products. Author or co-author of approximately 180 research papers. Served as an official U.S. Delegate to the International Dairy Congress in Rome in 1956, an Official Government adviser to the Congress in London in 1959, and a Lecturer to the Congress in Copenhagen in 1962, a consultant to UNICEF in 1960 on dairy education in Asia, and a consultant to UNICEF:FAO in 1966 on dairy programs; Board of Directors, Research and Development Associates, Inc.; recipient Borden Award from the American Chemical Society (1946) for research on chemistry of milk; Fellow, American Association for the Advancement of Science.

W. James Harper, Professor. Native of Indiana. Degrees: B.S., Purdue University, M.S. and Ph.D., University of Wisconsin. Staff member since 1949. Specialties: Microbiology and bio-chemistry fluid systems, research instrumentation and methods, flavor identification, enzymes and their mechanisms, milk and cheese technology. Author or co-author of 80 scientific papers. Spent six months in Sweden on research studies. Lecturer, International Seminar on Radioisotopes in Dairy Products, Vienna, 1966; Member: Liaison Committee of the American Dairy Science Association with the Food and Agricultural Organization of the United Nations. Fellow, American Association for the Advancement of Science.

Thorvald Kristoffersen, Professor. Native of Denmark. Degrees: B.S., Royal Veterinary and Agricultural College (Denmark). M.S. and Ph.D., Iowa State University. Staff member since 1955. Specialties: Dairy Microbiology and Biochemistry with relationship to cheese, butter and fermented products; milk analysis and standards; curriculum co-ordinator. Author of approximately 45 research papers. Committee member on Butter Standards, American Dairy Science Association; Corresponding Secretary Central Ohio Dairy Technology Society; Fellow, American Association for the Advancement of Science. Received The O.S.U. Gamma Sigma Delta Award of Merit (1968) for contributions to Agriculture.

Walter L. Slatter, Professor and Extension Specialist. (On leave 1969-71) Native of Ohio. Degrees: B.S., Ohio State University; M.S., Iowa State University; Ph.D., University of Minnesota. Staff member since 1936. Specialties: Dairy Microbiology, Technology of Butter and Cheese; product grades, standards and quality evaluations, adult education. Author or co-author of approximately 30 scientific papers. Has served as Vice President and President O.S.U. Chapter Gamma Sigma Delta, as member of American Dairy Science Association's committees on Dairy Products Judging, Membership, International Affairs, and Student Affiliate, on the Scholarship Awards Committee of the Milk Industry Foundation, as Corresponding Secretary of The Maumee Valley and Cincinnati Dairy Tech. Societies, and as Secretary-Treasurer and Technical Advisor of The Ohio Swiss Cheese Assn. Spent four years in India as the University's Dairy Technology Consultant and currently on similar appointment to Brazil.

Poul M. T. Hansen, Assoc. Professor, Res. Associate. Native of Denmark. Degrees: B.S., Royal Veterinarian and Agricultural College (Denmark); M.S. and Ph.D., University of Illinois. Joined Staff, 1964. Specialties: Physical-chemistry and biochemistry of food systems. Former Research Officer in charge of new product development, Commonwealth Sci. and Indus. Res. Organ., Div. Dairy Research, Australia. Author or co-author of papers on milk proteins, hydrophilic colloids, powdered butter, and flavor components of chocolate products. Recipient: Silver Medal awarded by the Federal Council of the Australian Society of Dairy Technology for outstanding publication in dairy research (1963).

Emil M. Mikolajcik, Assoc. Professor, Res. Associate. Native of Connecticut. Degrees: B.S., University of Connecticut, M.S. and Ph.D., Ohio State University. Staff member since 1961. Specialties: Microbiology, antibiotics, bacterial metabolism, bacteriophage, nucleic acids, bacterial enzyme systems, and spore-forming microorganisms. For eight years was Staff member, University of Puerto Rico, achieving the professorship in 1961. Author or co-author of scientific papers on microbiology as related to milk and milk products.

Demetrius G. Vakaleris, Assoc. Professor. Native of Greece. Degrees: B.S. University of Thessaloniki; M.S. and Ph.D., University of Wisconsin. Joined staff 1967. Specialties: Biochemistry and technology of dairy and non-dairy foods, new product development, concentrated and frozen dairy and related products. Former Asst. Professor, University of Thessaloniki. Fulbright scholar. For 10 years Senior Chemist and Group Leader of new product development, Research and Development Division, National Dairy Products Corp. Served on Greek Dept. of Agr. Intern. Committee for the Organization of Agricultural Research. Author of scientific papers on biochemistry as related to dairy and dairy-type foods.

John L. Blaisdell, Asst. Professor in Dairy Technology and Agr. Engineering. Native of Massachusetts. Joined Staff in 1964. Degrees: B.S. in Chem. Eng., and M.S. in Agr. Eng., University of Massachusetts; Ph.D. in Food Science, Michigan State University. Specialties: Food processing engineering. Author or co-author of papers on thermal processing, cooling and rheology. Former postdoctoral fellow, Michigan State University. Member: Steering Committee, Technical Committee, and Manuscript Review Committee, Food Eng. Division, American Society of Agr. Eng.

Jaime E. Hidalgo, Asst. Professor. Native of Chile. Degrees: B.S., Catholic University of Santiago, Chile; M.S. and Ph.D., The Ohio State University. Joined Staff in 1969. Specialities: Physical chemistry of food systems, interactions between proteins and hydrophilio colloids; engineering and industrial operations; technology of milk and milk products; dairy plant layout. Former Plant Manager of a large dairy plant in Santiago, Chile. Co-author of papers on the electrophoretic characterization of hydrophilic colloids and their interactions with milk serum proteins.

John P. Kenyon, Assistant Professor, Dairy Plant Manager. Native of New York. B.S., Pennsylvania State University. Staff member since 1965. Specialties: Management Practices, industrial operations. Eight years industrial experience; former Plant Manager of a Metropolitan New York milk plant. Director, Columbus Dairy Council.

John B. Lindamood, Instructor and Extension Specialist. Native of Virginia. Degrees: B.S. and M.S., Virginia Polytechnic Institute. Staff member since 1961. Specialties: Concentrated and frozen dairy foods, adult education. Eight years industrial experience in dairy plant supervision and management. Co-author of papers on chocolate flavoring materials and corn sweeteners for ice cream. Corresponding Secretary, Dairy Techn. Societies of Northwastern Ohio and Maumee Valley.

THE FACULTY AND THE UNIVERSITY:

Many faculty members of the Department have been elected to major University groups during the past two decades, groups which have important responsibilities in establishing policies, determining programs, or providing guidance for the University and its Administration. The posts held by the faculty are as follows:

I. A. Gould: Graduate Council (1949-51), Graduate Council - Executive Committee (1955-57), Faculty Council (1952-55), Administrative Board - Institute of Nutrition and Food Technology (1960-63), Faculty-member Director, Ohio State University Research Foundation (1967-70); W. J. Harper: Graduate Council - alternate (1968-70); T. Kristoffersen: Graduate Council - alternate (1966-68), Conference Committee of the teaching Staff (1967-69), Alumni Award Committee for Distinguished Teaching (Chairman) (1968-69); W. L. Slatter: Graduate Council (1962-65).

OTHER FACULTY:

In addition to the regular faculty members listed above for 1969-70, there are three other individuals who hold special appointments to the Staff. Adjunct Associate Professorships are held by David A. Hill, Chief, Division of Foods, Dairies, and Drugs, Ohio Department of Agriculture, and Ray B. Watts, Chief, Division of Sanitation, The Ohio Department of Health; and a Visiting Associate Professorship is held by Ronald D. Hill, Principal Research Scientist, Commonwealth Scientific and Industrial Organization, Australia.